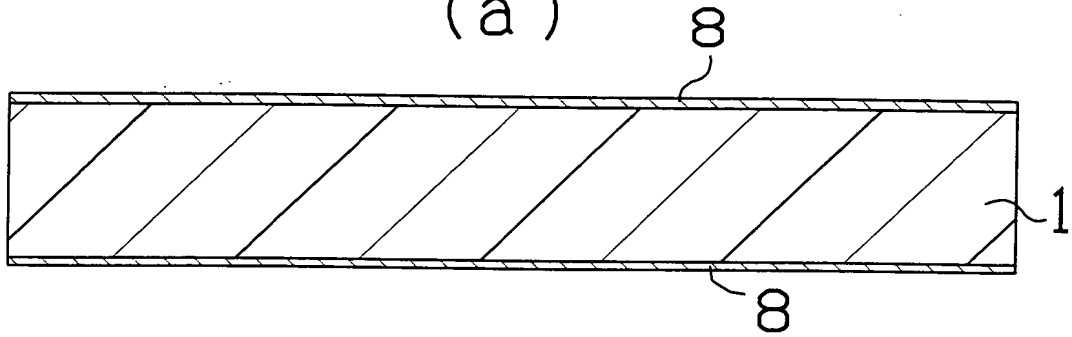
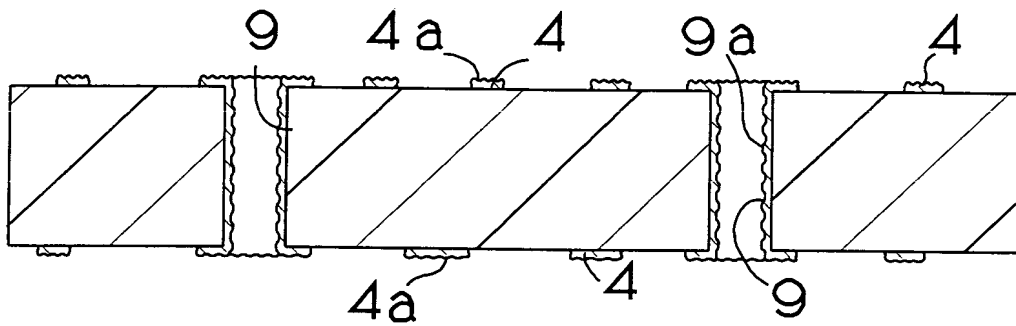


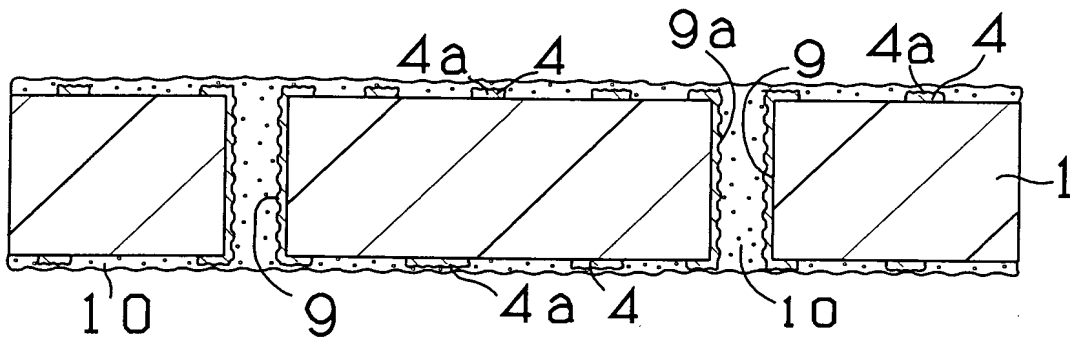
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Fig. 1
(a)



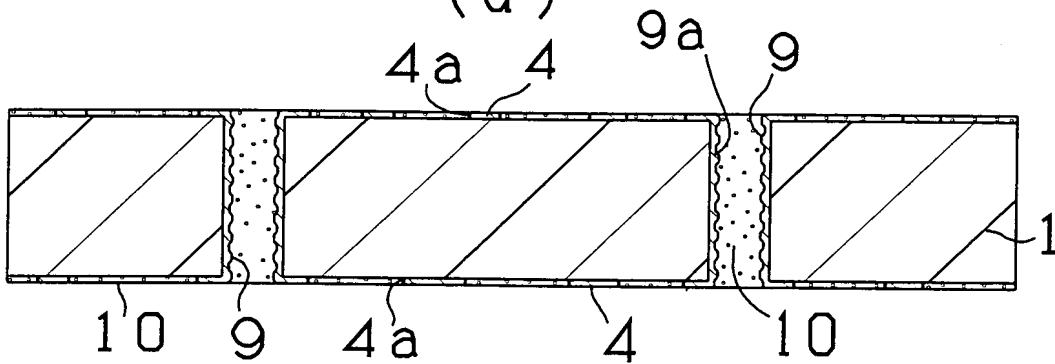
(b)



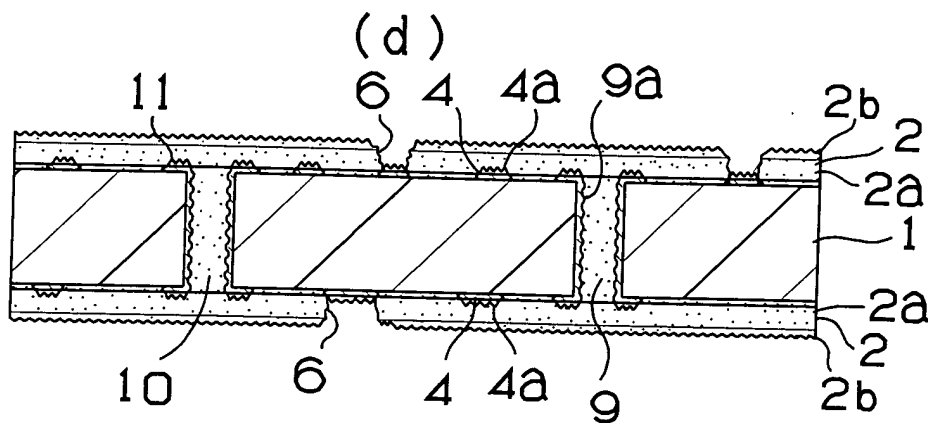
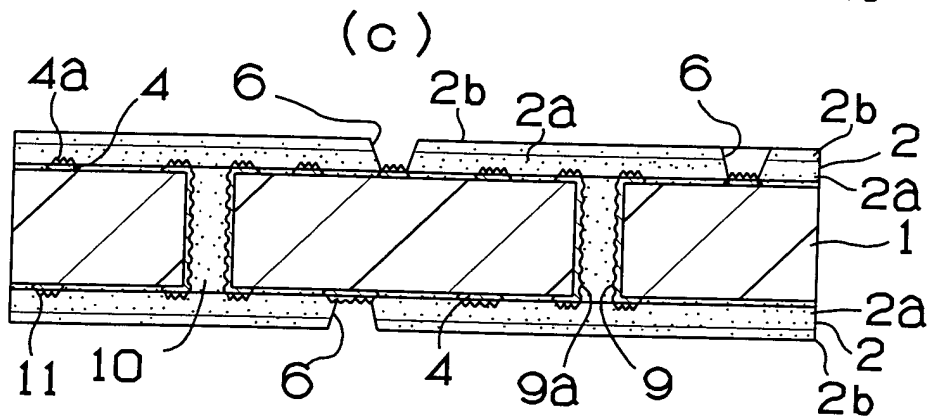
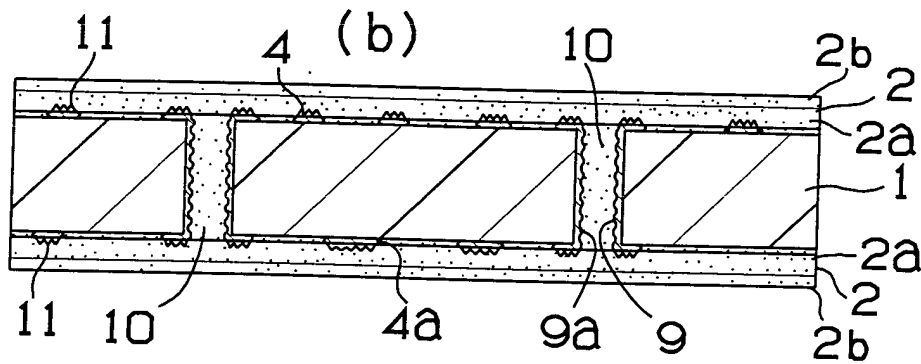
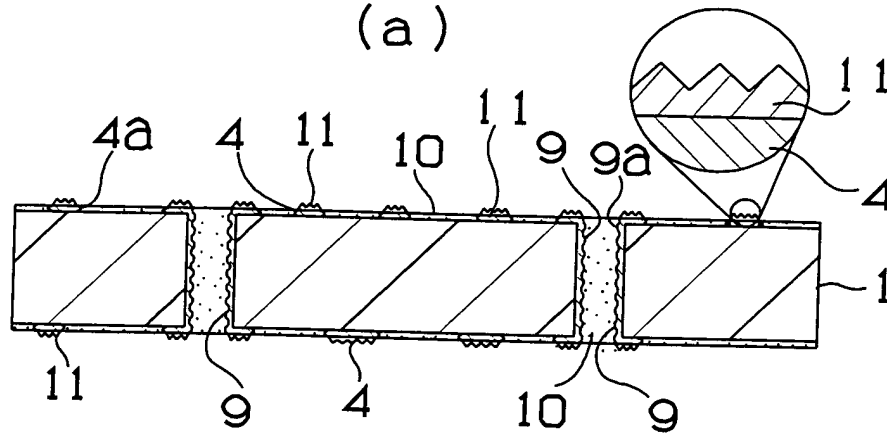
(c)

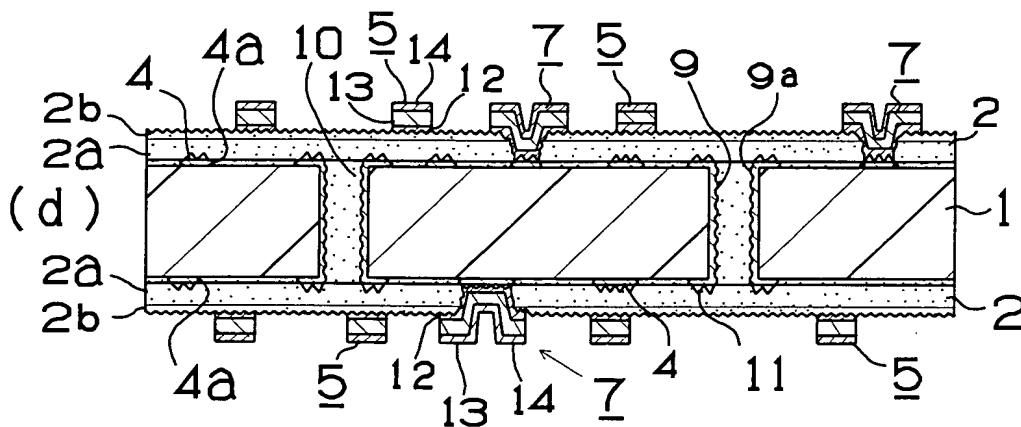
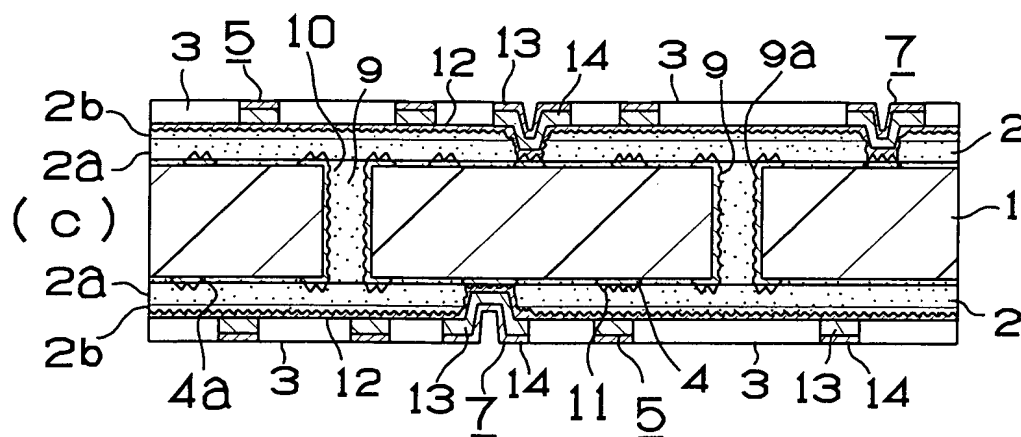
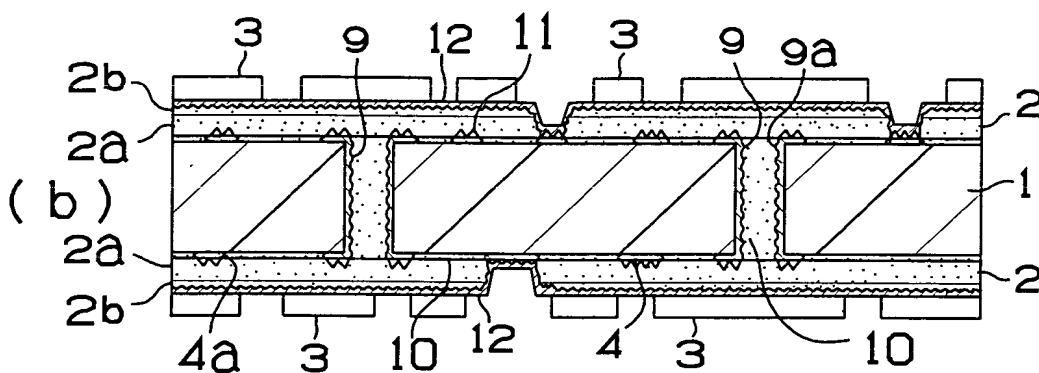
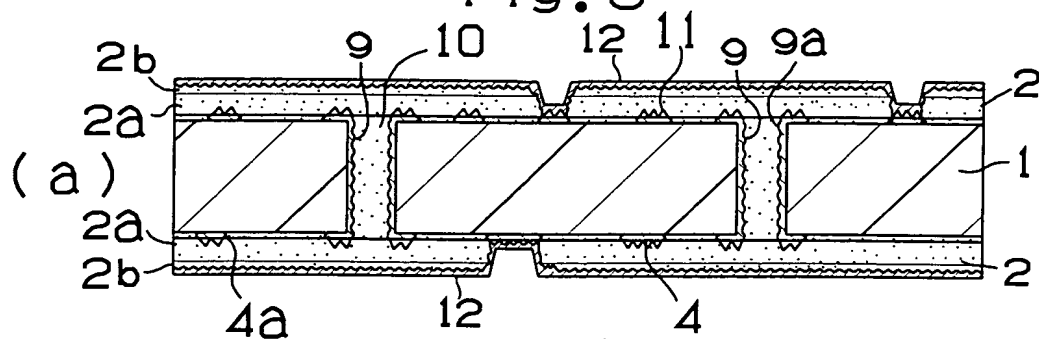


(d)

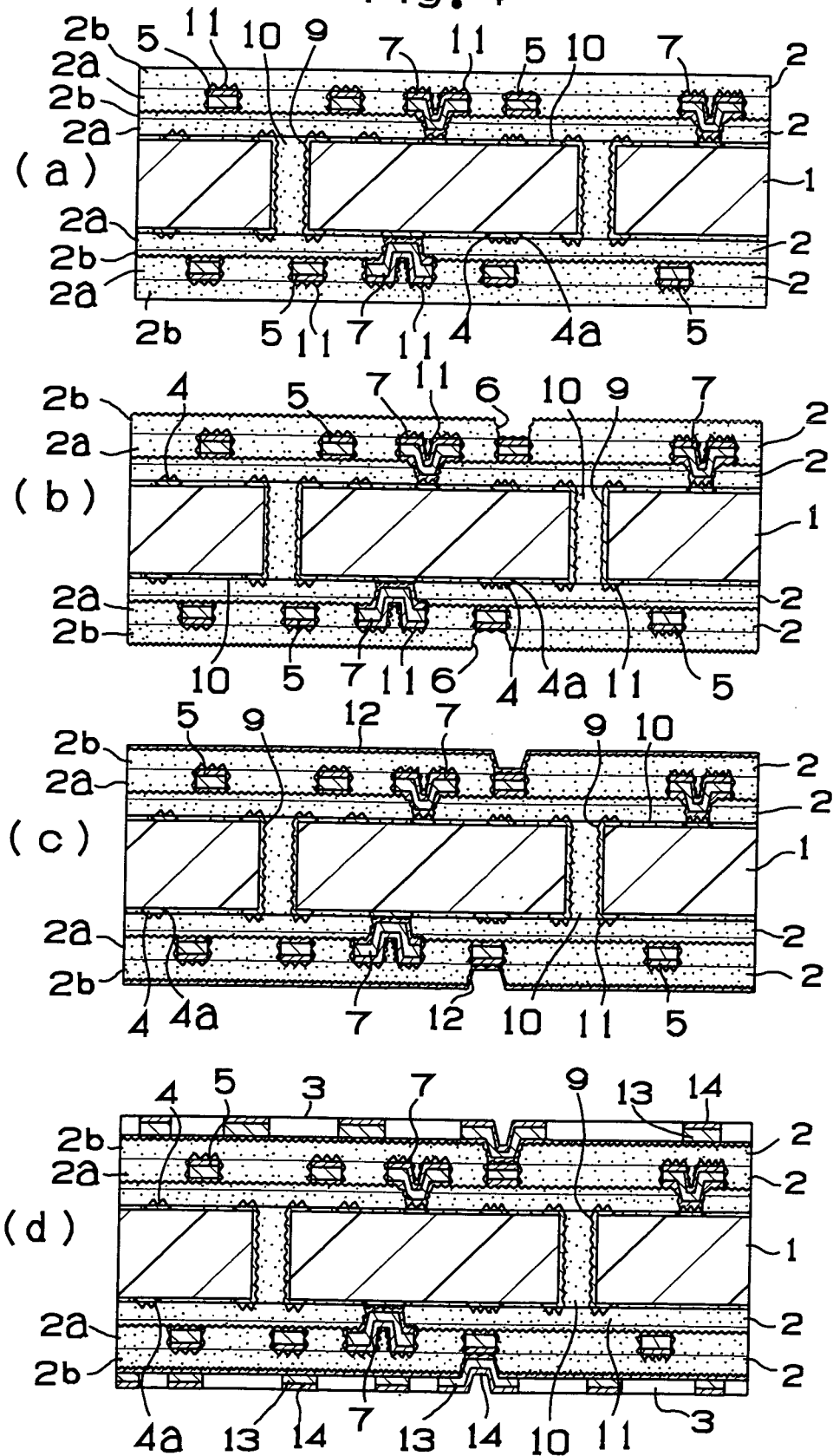


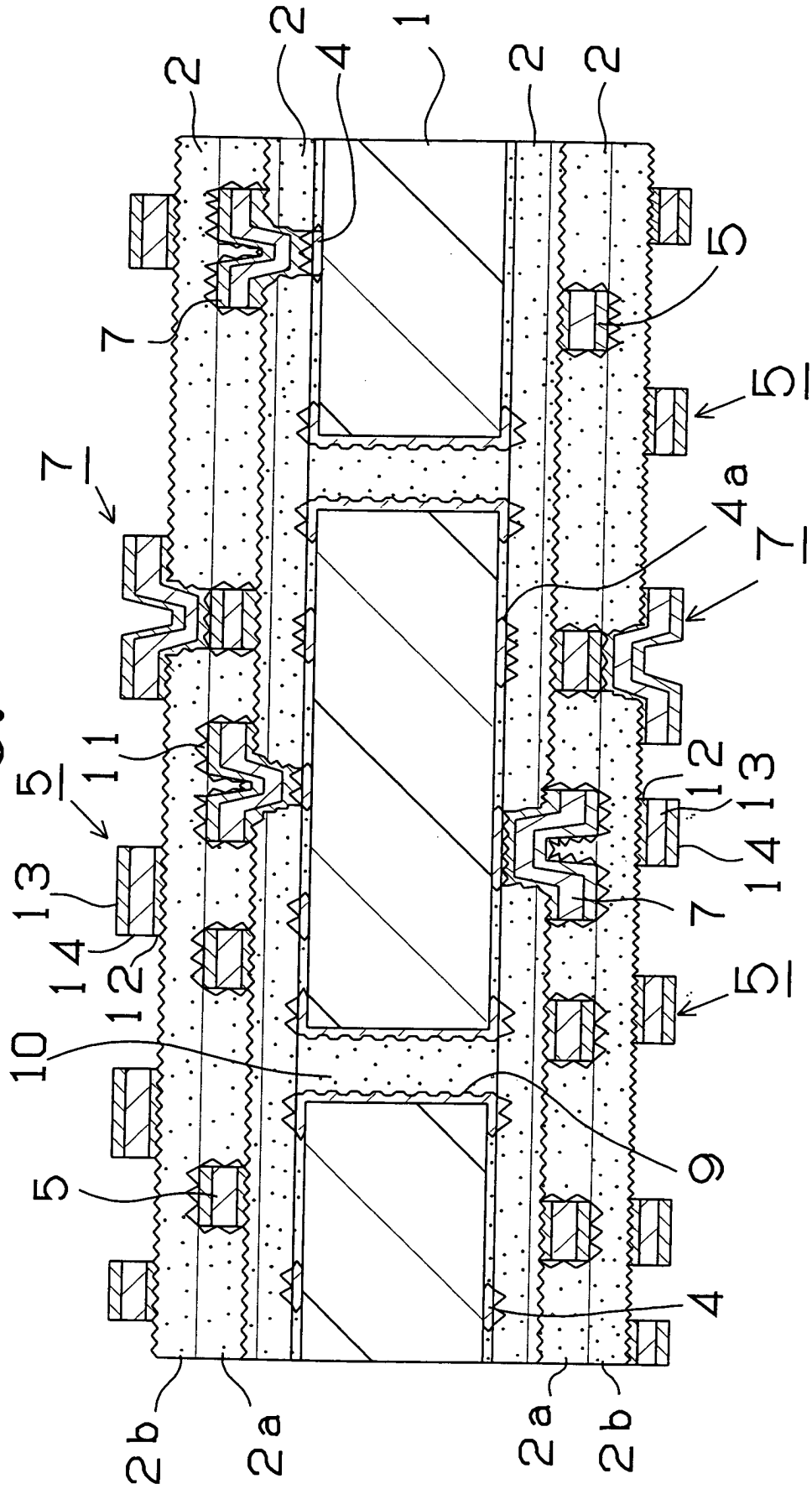
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Fig. 2
(a)

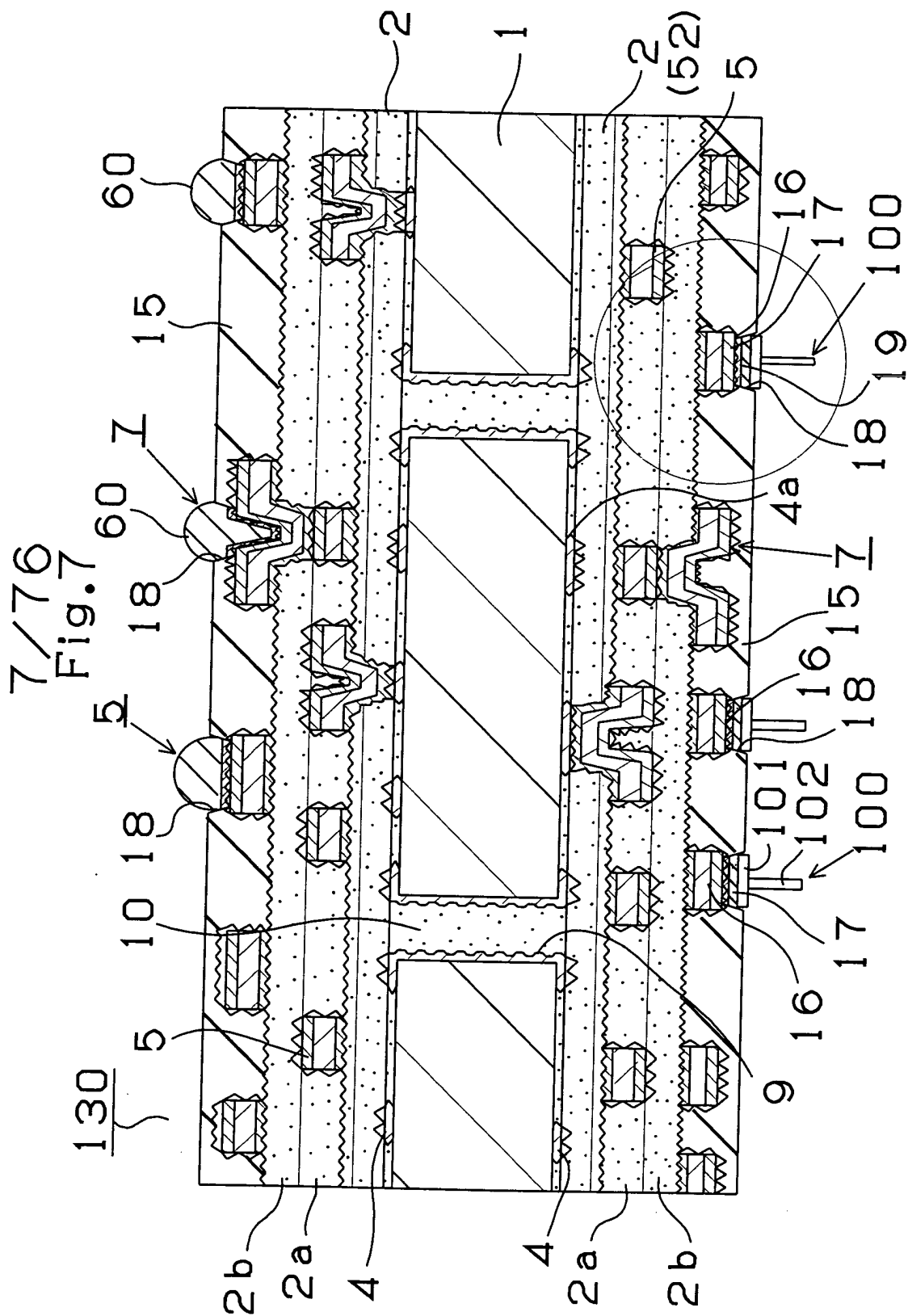


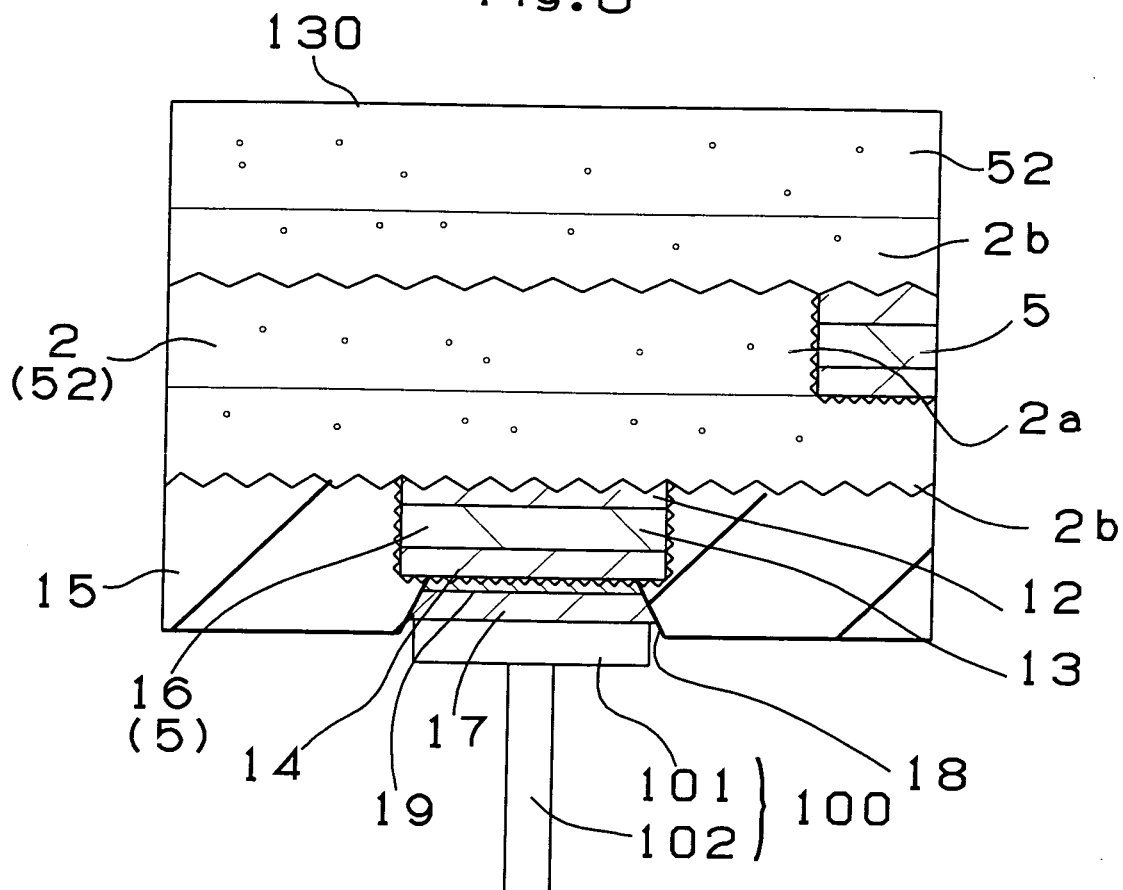
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Fig. 3

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Fig. 4

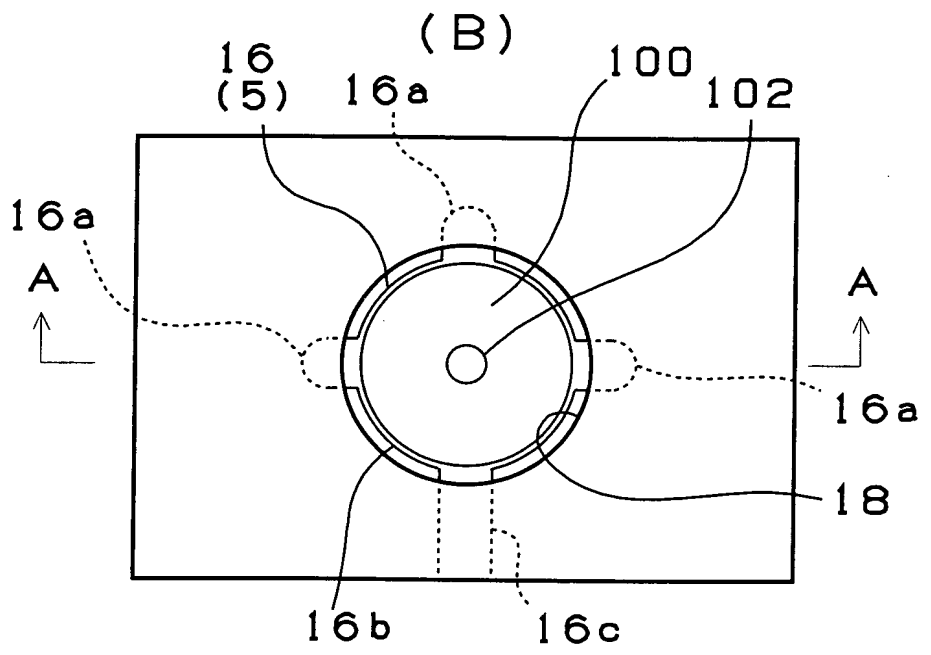
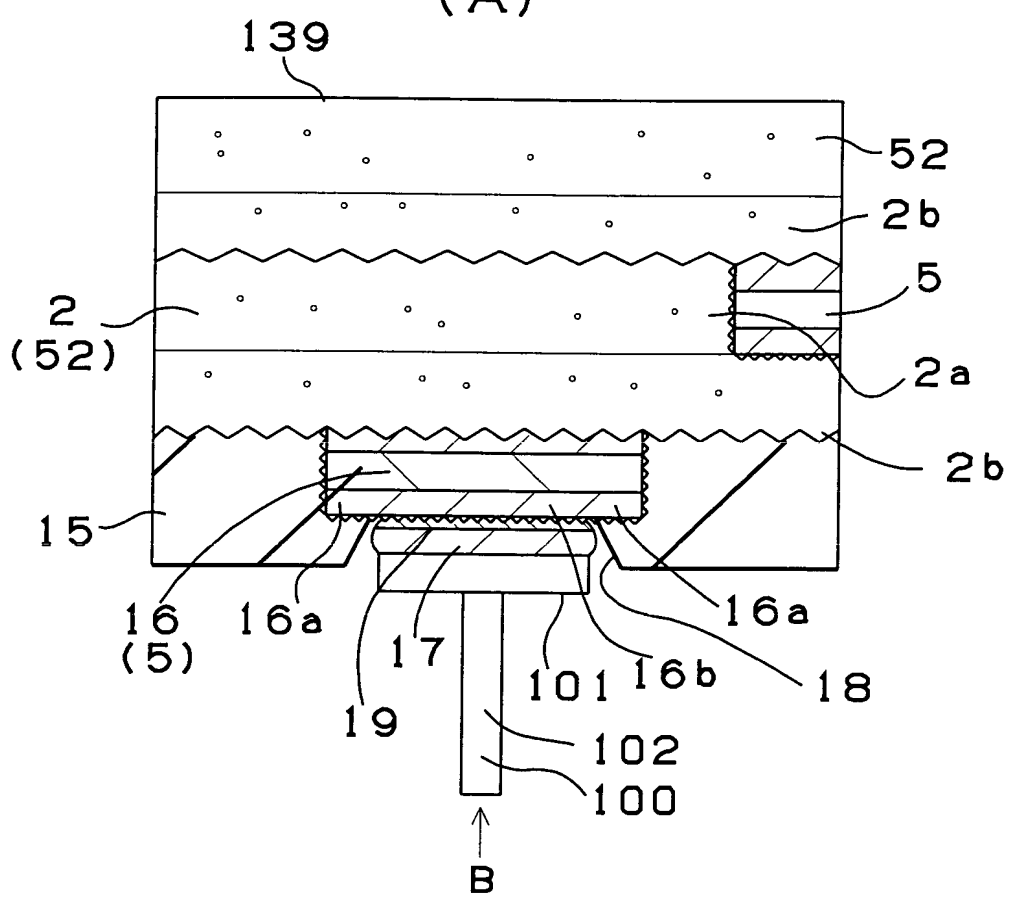




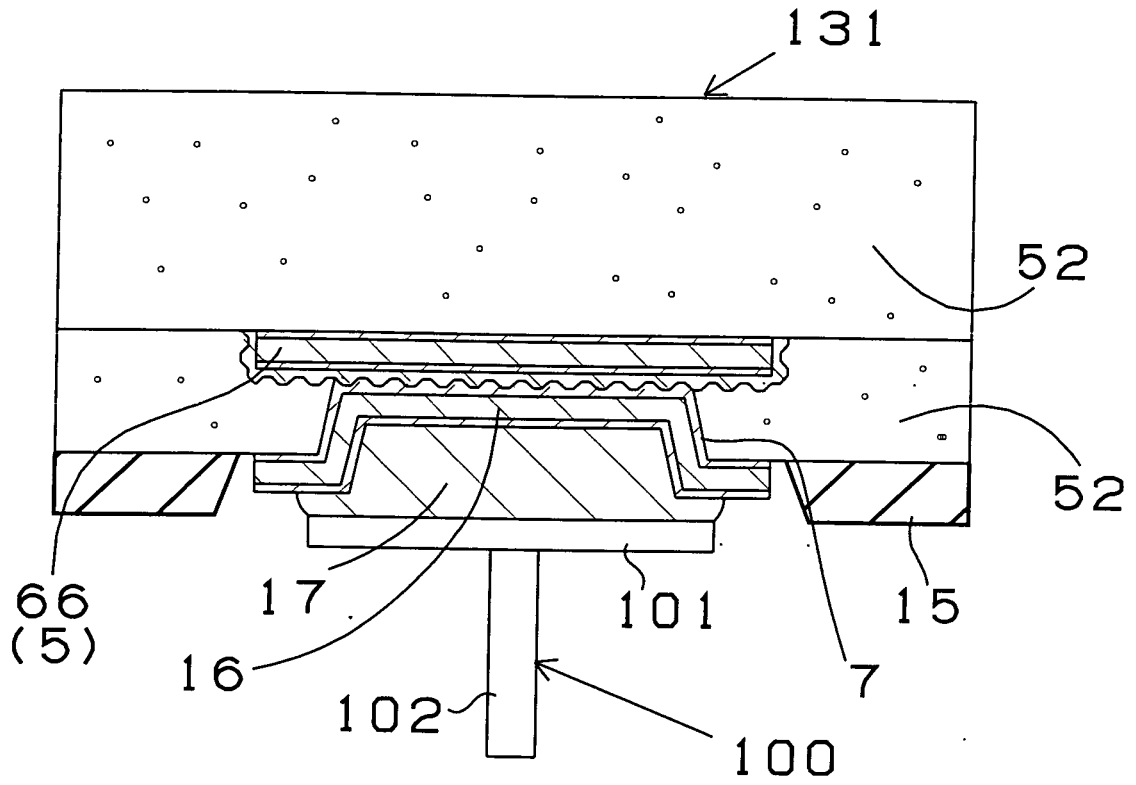


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Fig. 8

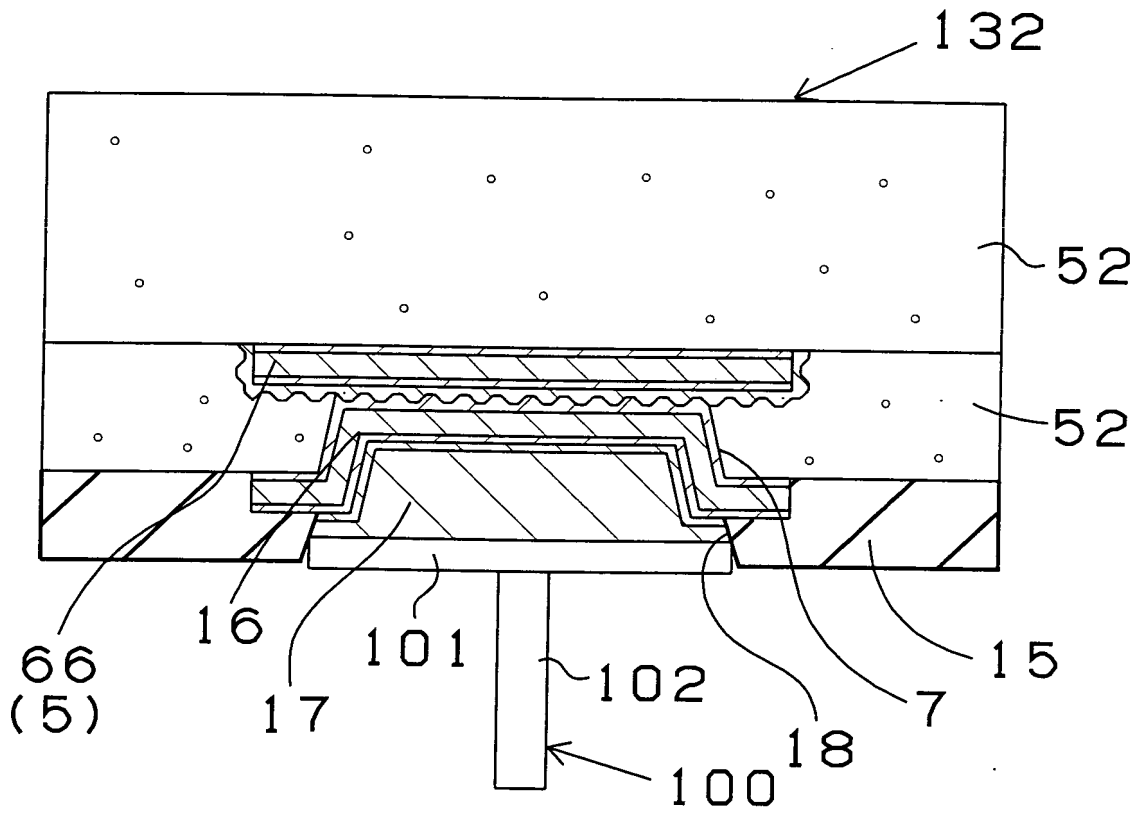
9/76
Fig.9
(A)



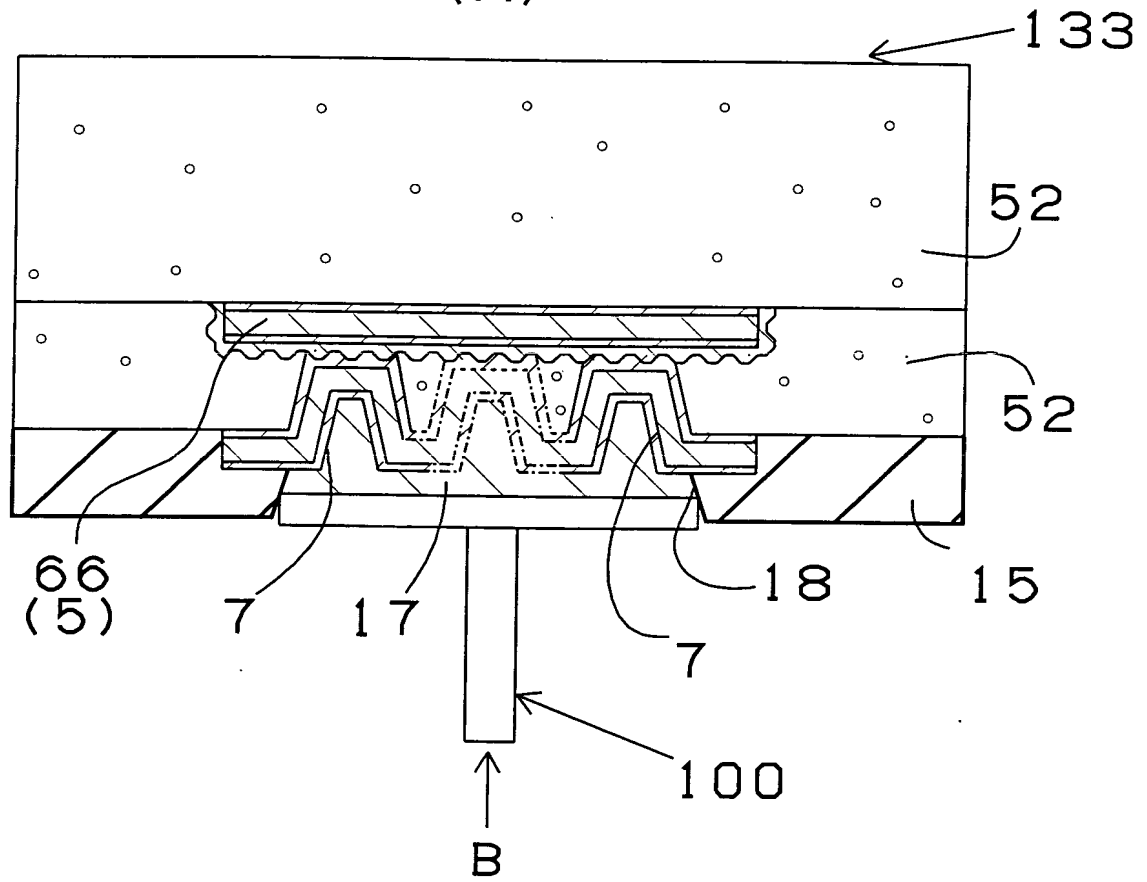
10/76
Fig.10



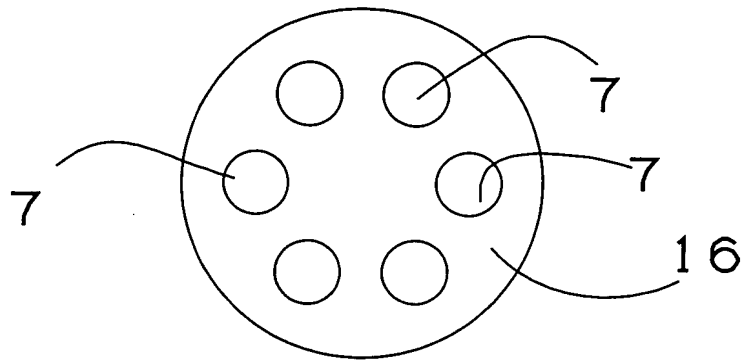
11/76
Fig. 11

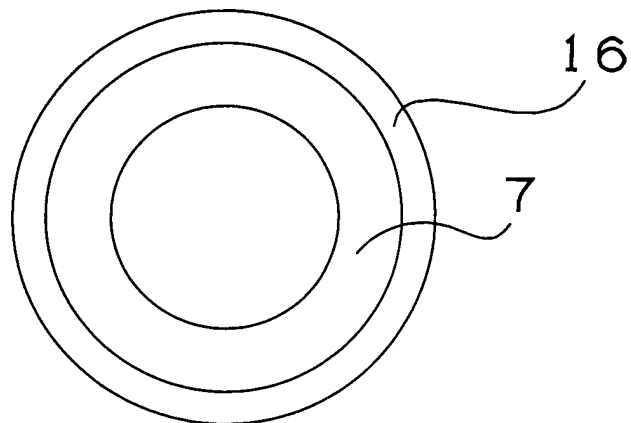


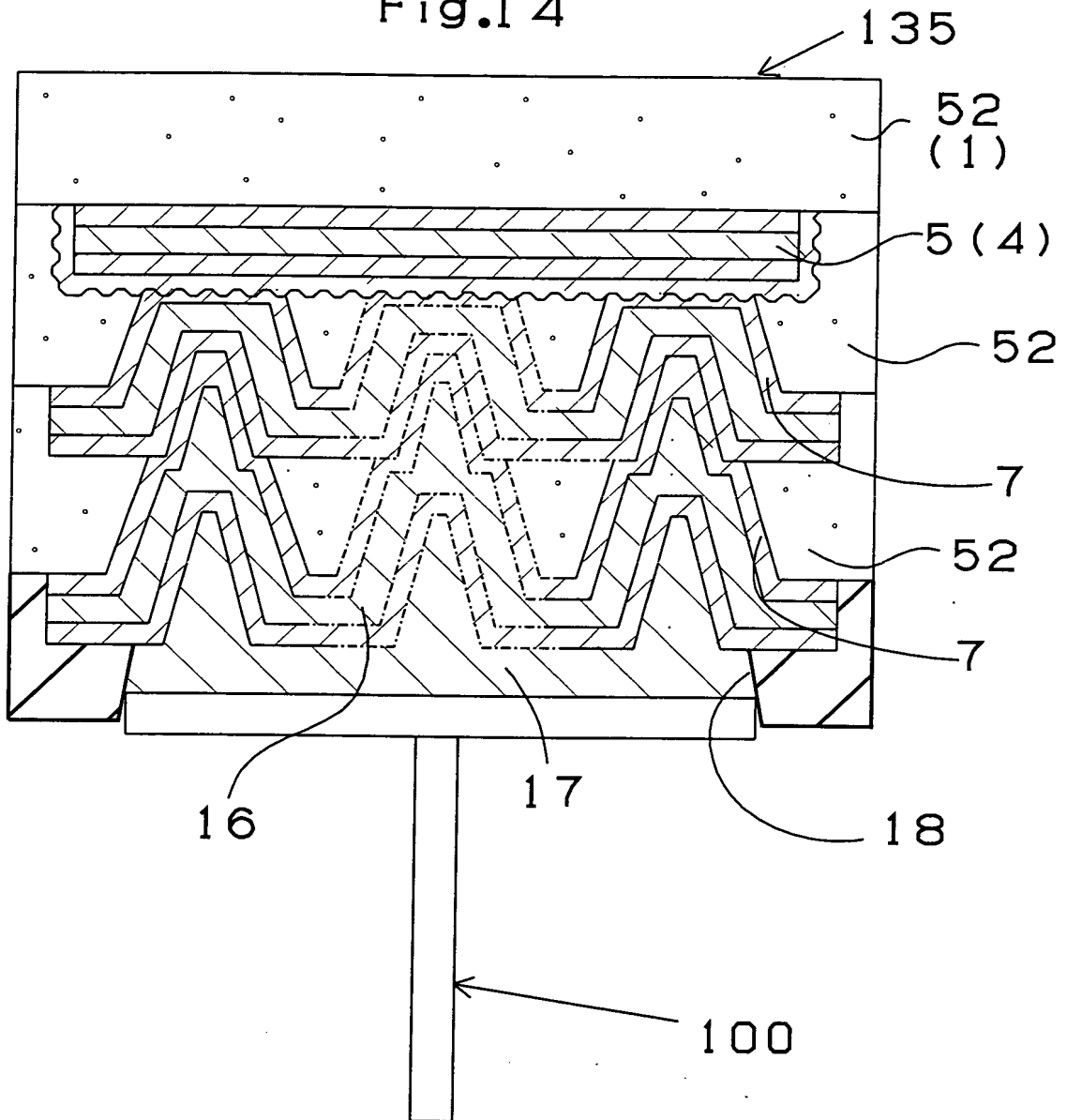
12/76
Fig.12
(A)



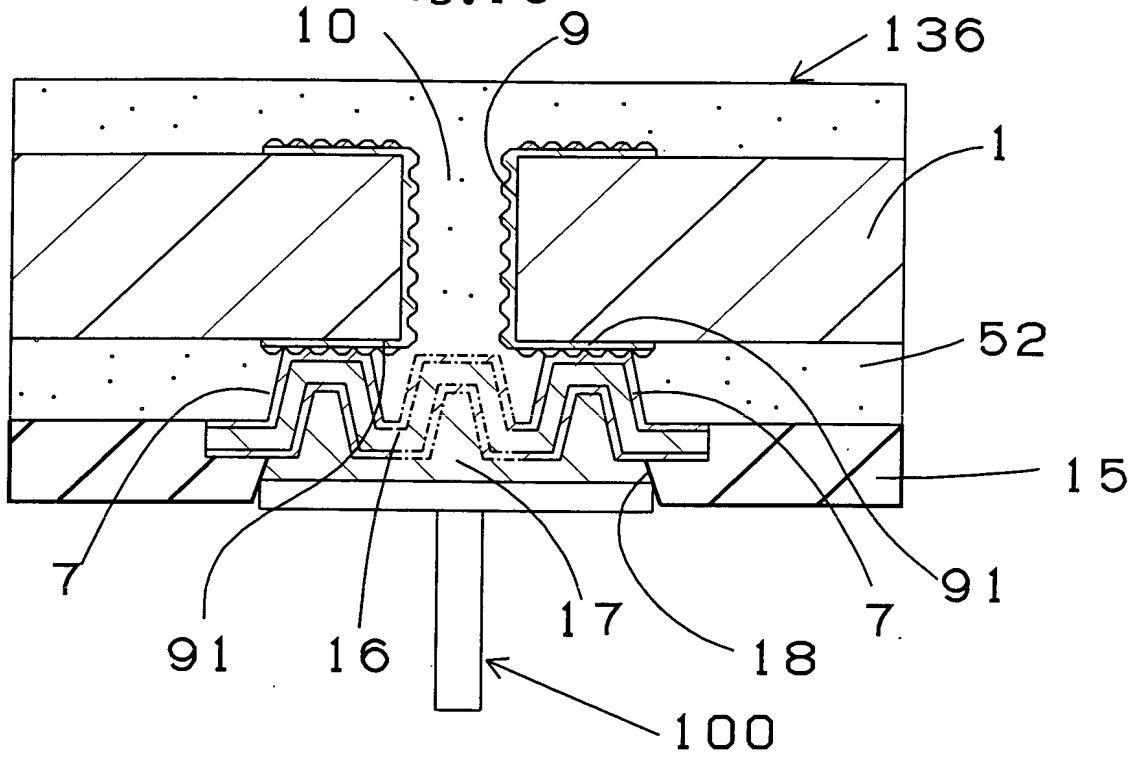
(B)



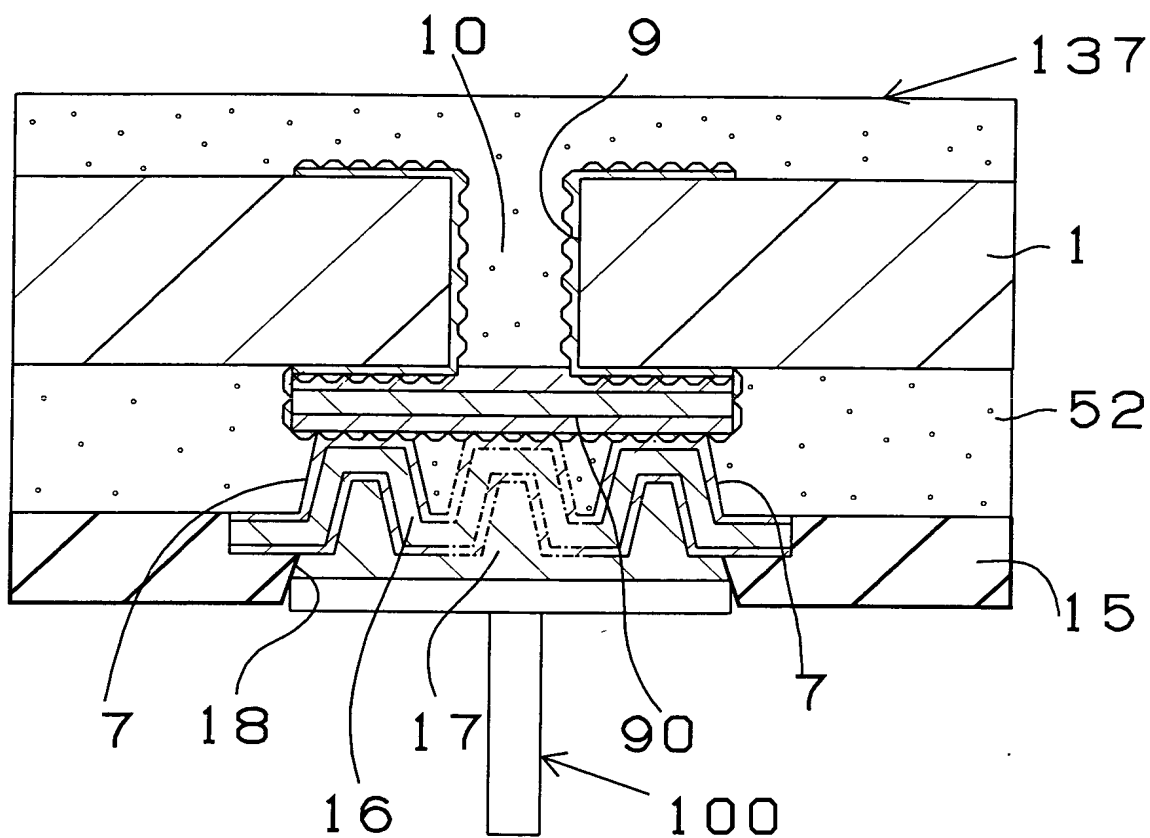


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Fig.14

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Fig.15



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Fig.16



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Fig.17

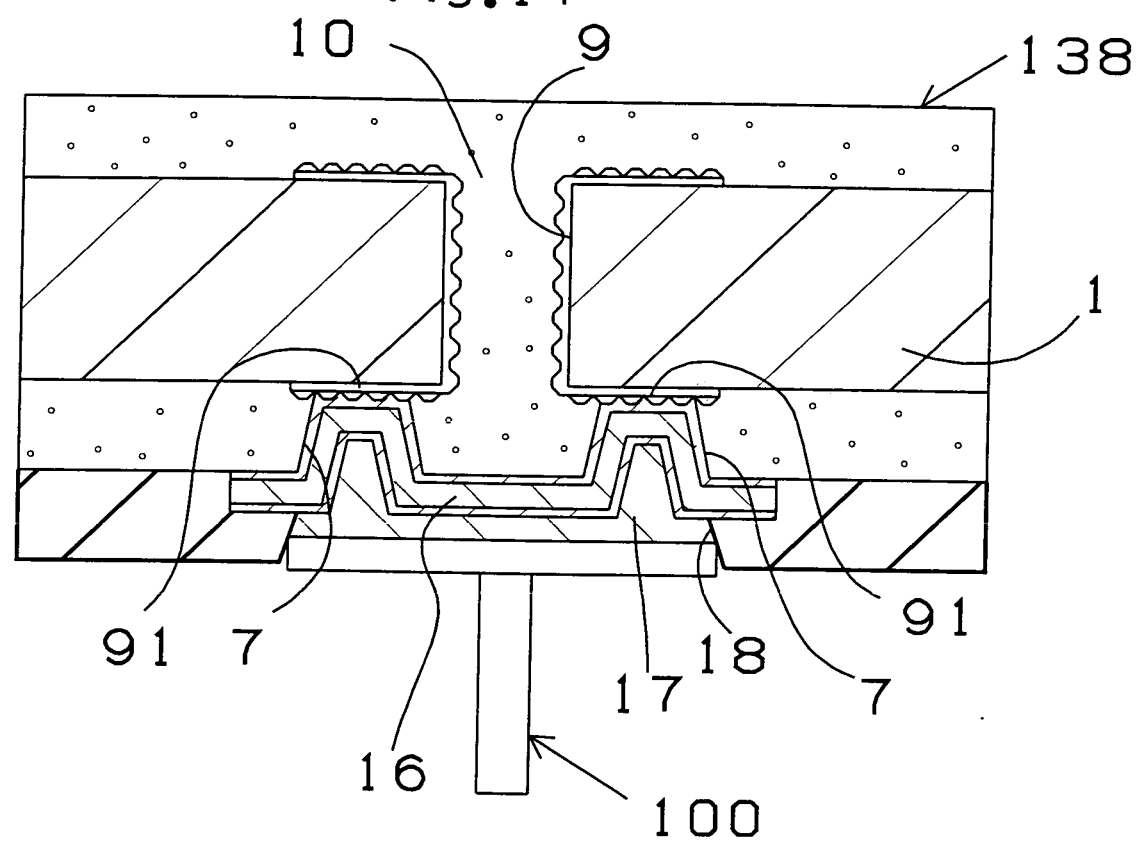
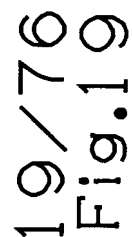
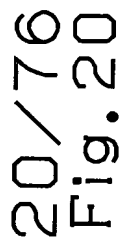


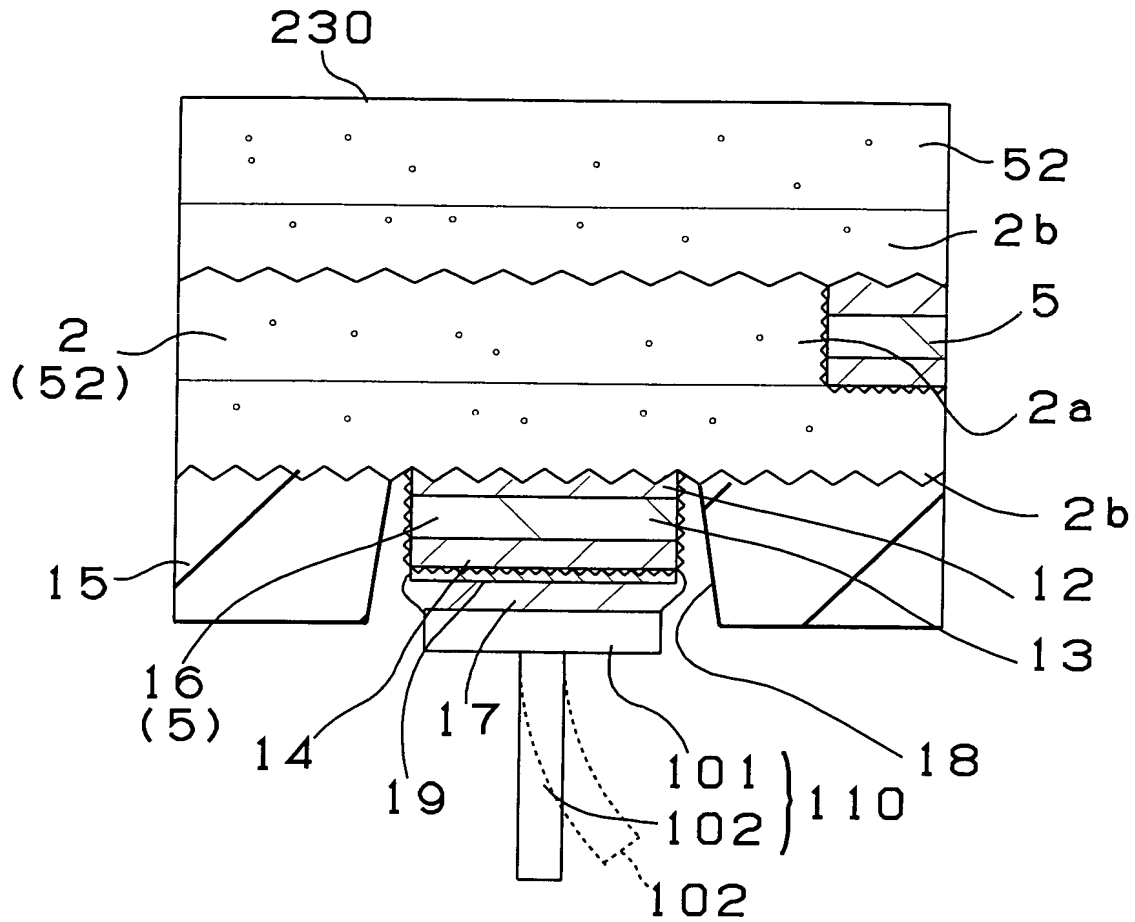
Fig. 18

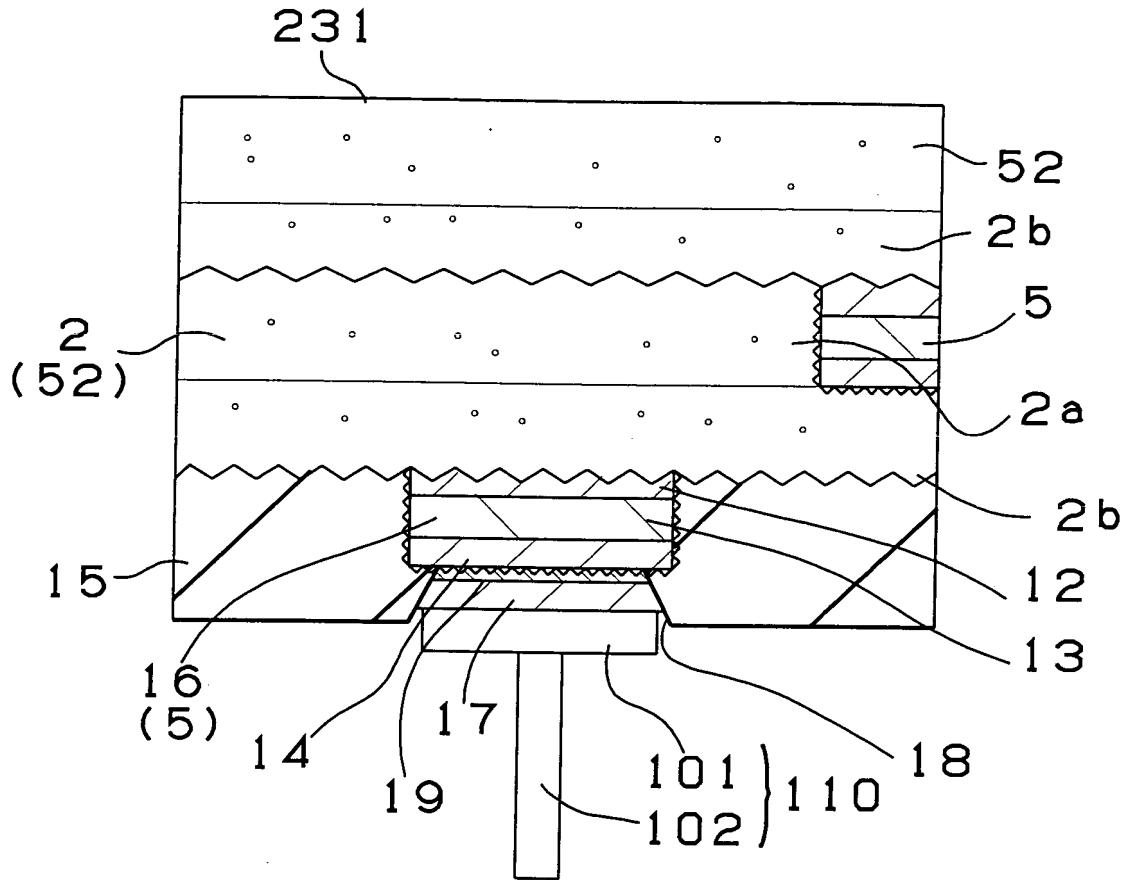
	conductive connecting pin		after heating test					after heat cycle test			
	strength of adhesive bonding		state of pin	state of pin	strength of adhesive bonding		conduction test	state of pin	strength of adhesive bonding		conduction test
	mini-mum value	ave-rage value			mini-mum value	ave-rage value			mini-mum value	ave-rage value	
first embodiment	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
example 1 of first embodiment	2.0	3.0	OK	OK	2.0	3.0	OK	OK	1.9	2.9	OK
first modification	2.1	3.2	OK	OK	2.1	3.2	OK	OK	2.0	3.1	OK
example 1 of first modification	2.1	3.5	OK	OK	2.1	3.5	OK	OK	2.0	3.4	OK
example 2 of first modification	2.1	3.6	OK	OK	2.1	3.6	OK	OK	2.0	3.5	OK
example 3 of first modification	2.1	3.5	OK	OK	2.1	3.5	OK	OK	2.0	3.4	OK
example 4 of first modification	2.1	3.8	OK	OK	2.1	3.8	OK	OK	2.0	3.6	OK
second modification	2.0	3.0	OK	OK	2.0	3.0	OK	OK	1.9	2.9	OK
example 1 of second modification	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
example 2 of second modification	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
third modification	2.0	3.6	OK	OK	2.0	3.6	OK	OK	1.9	3.5	OK

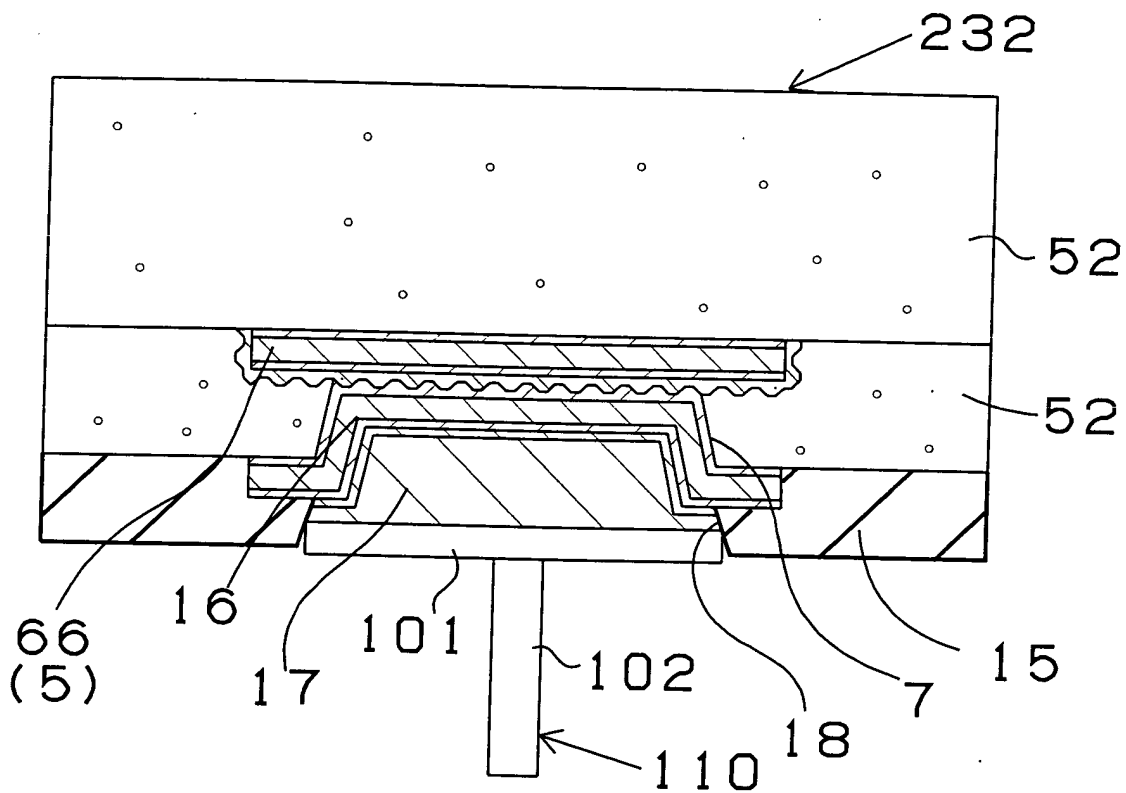




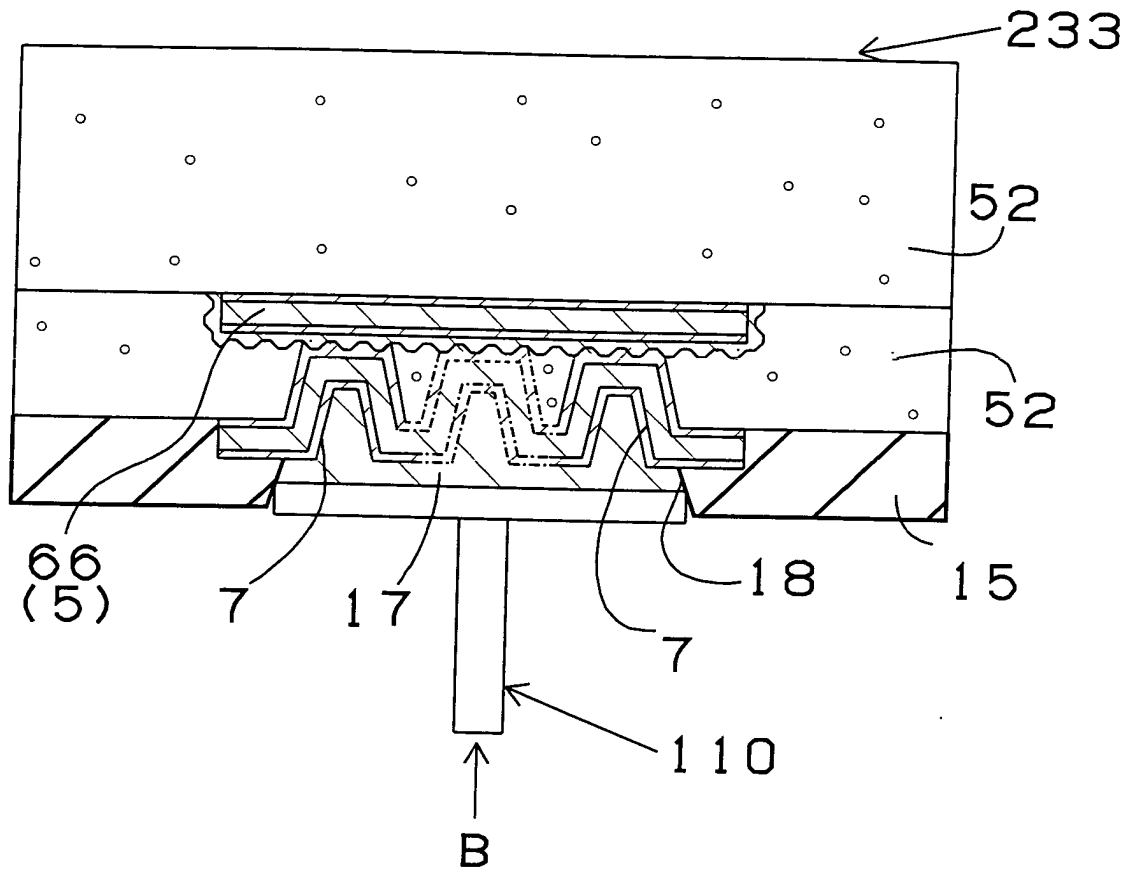
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Fig. 21



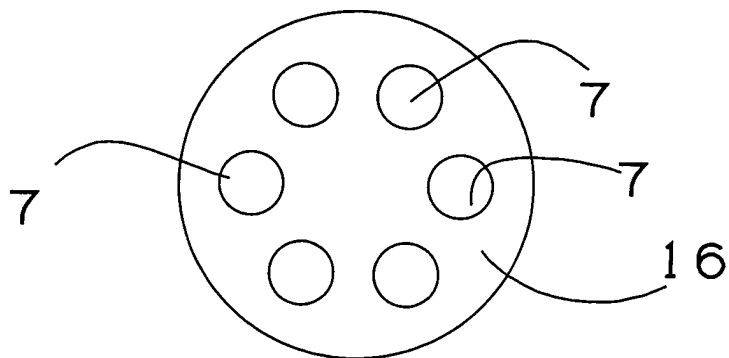
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Fig.22

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Fig.23

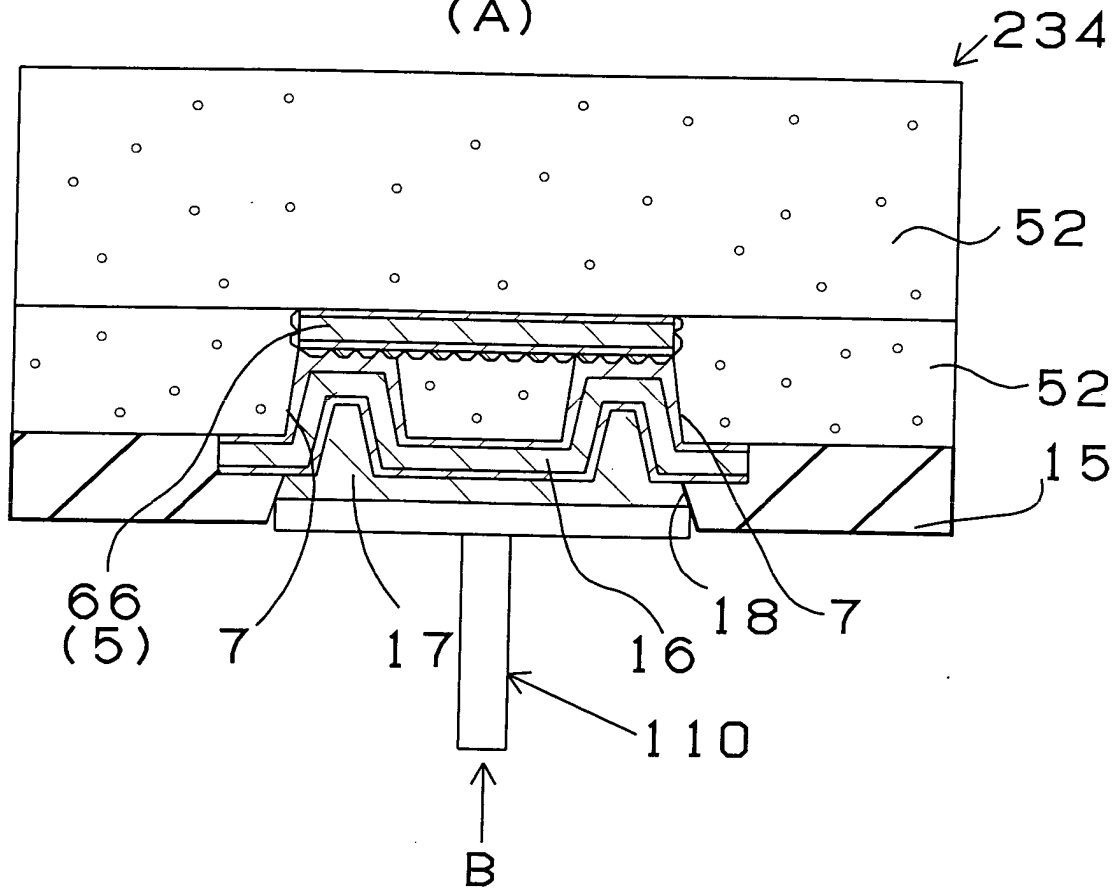
24/76
Fig.24
(A)



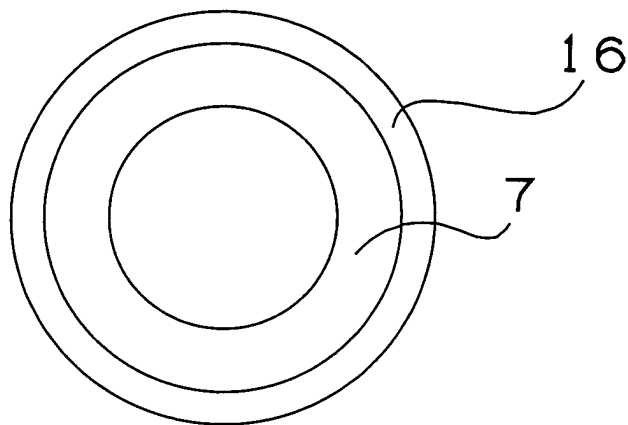
(B)

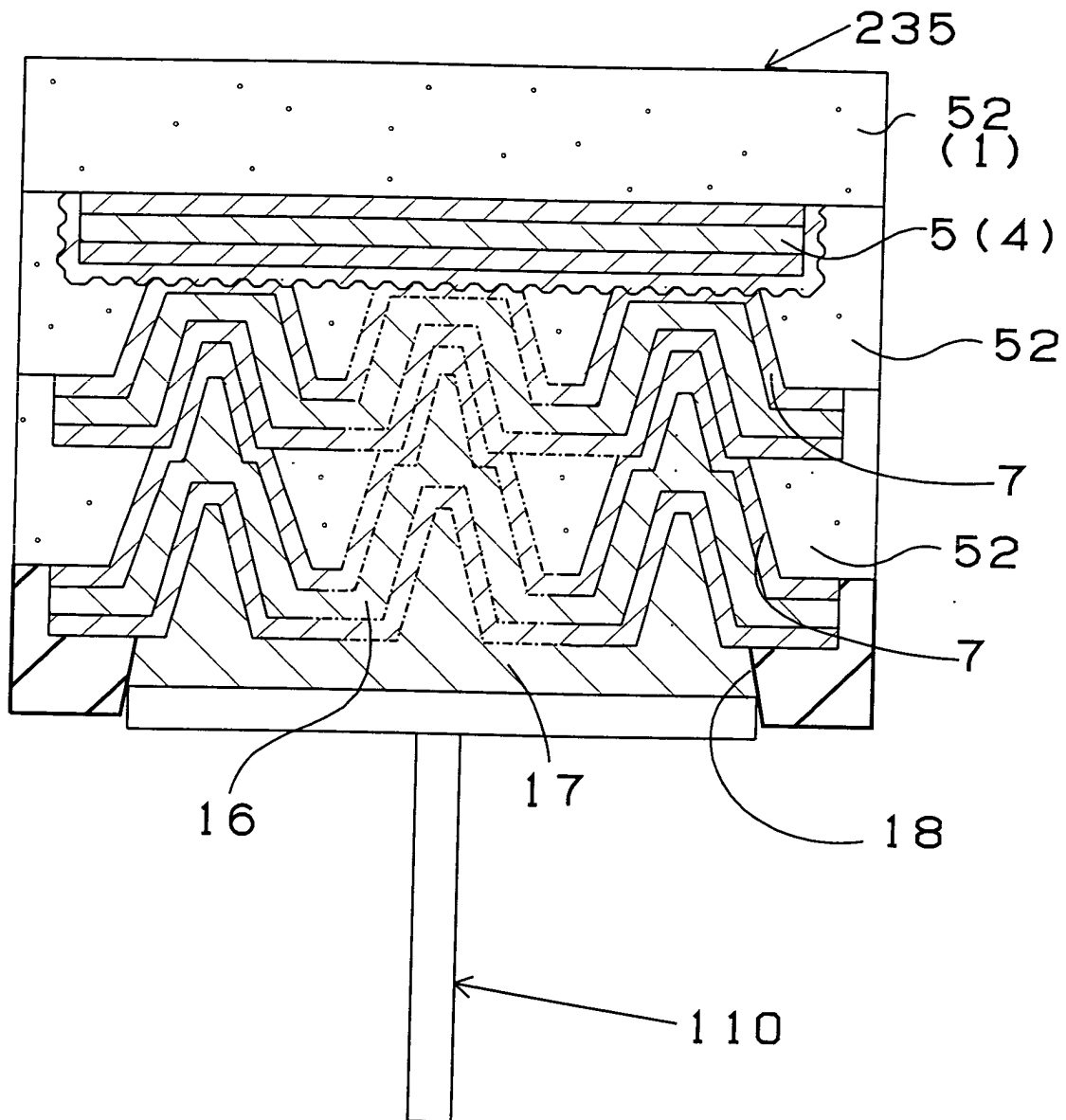


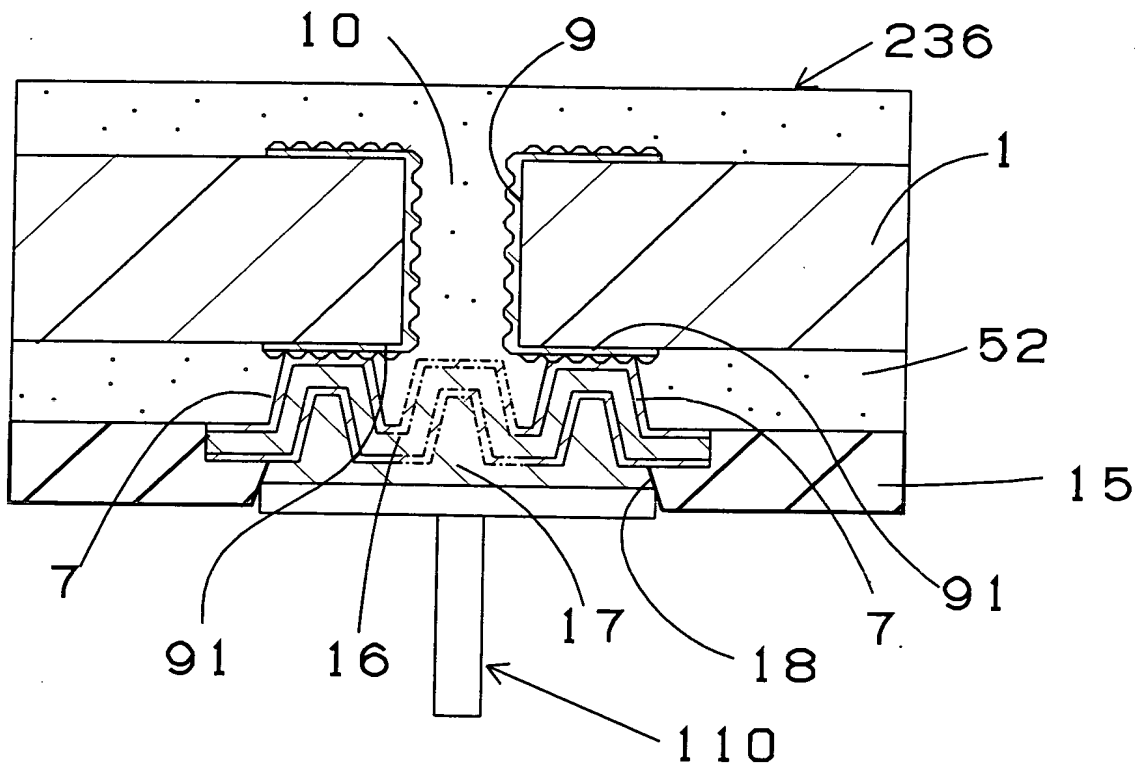
25/76
Fig.25
(A)

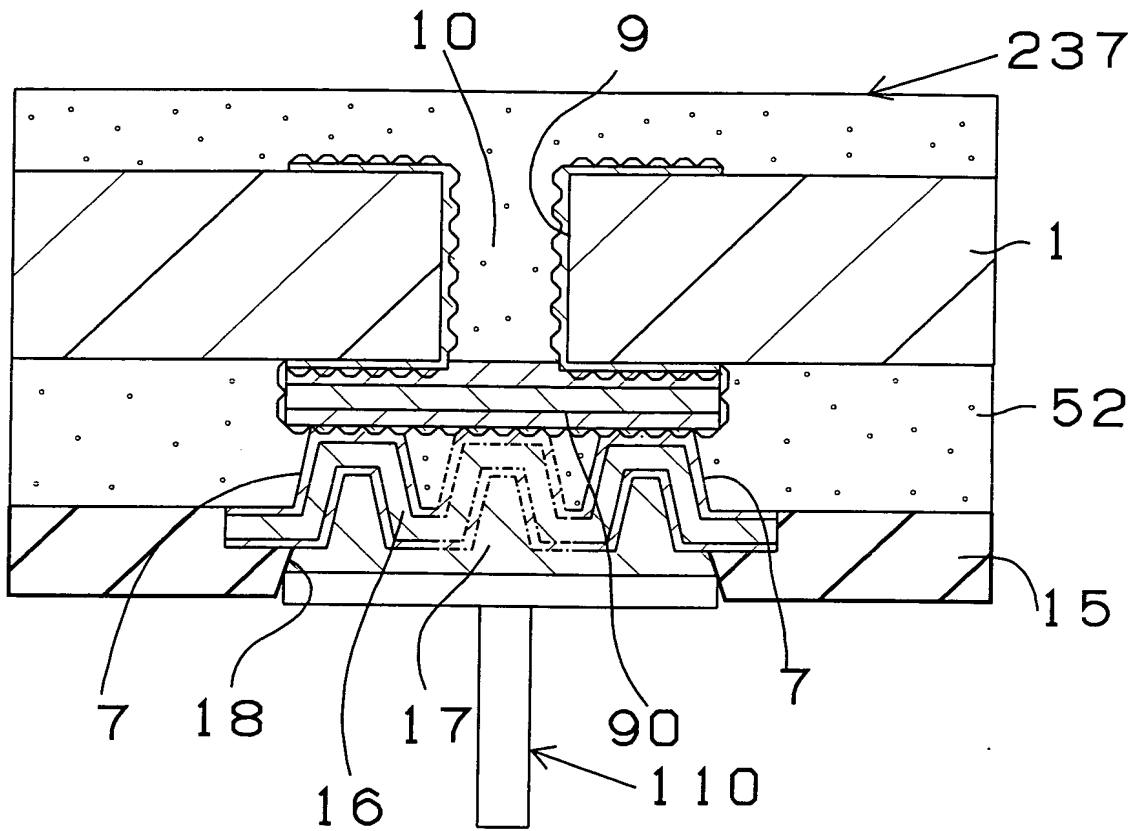


(B)



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Fig. 26

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Fig.27

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Fig.28

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Fig.29

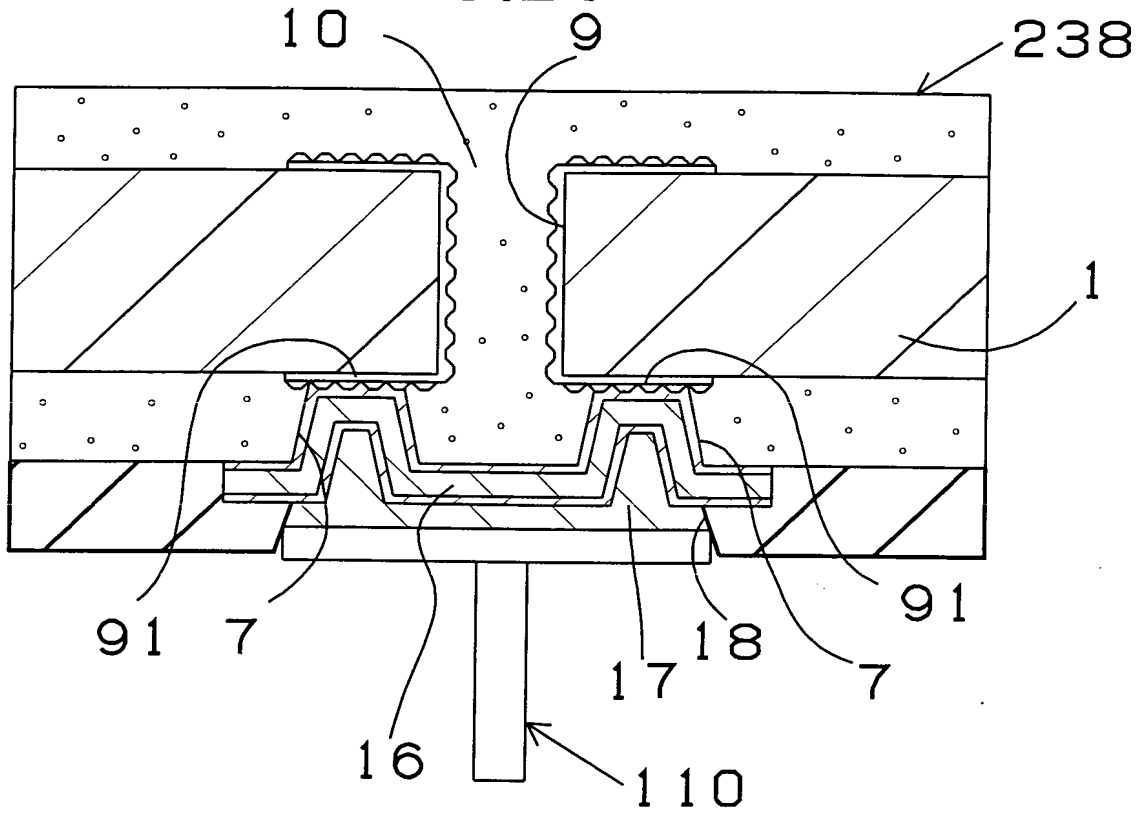
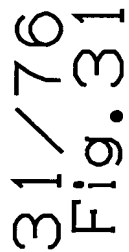
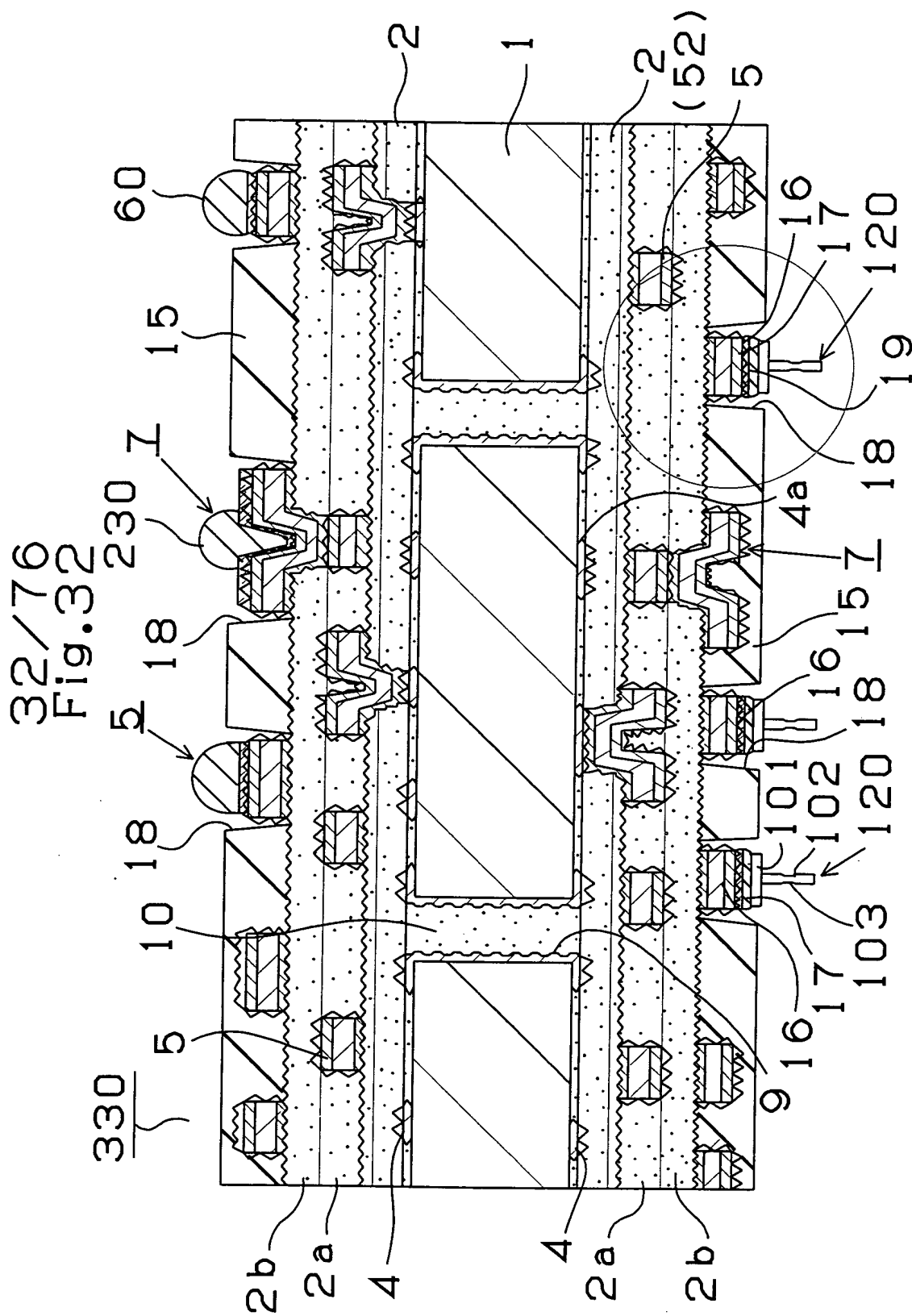


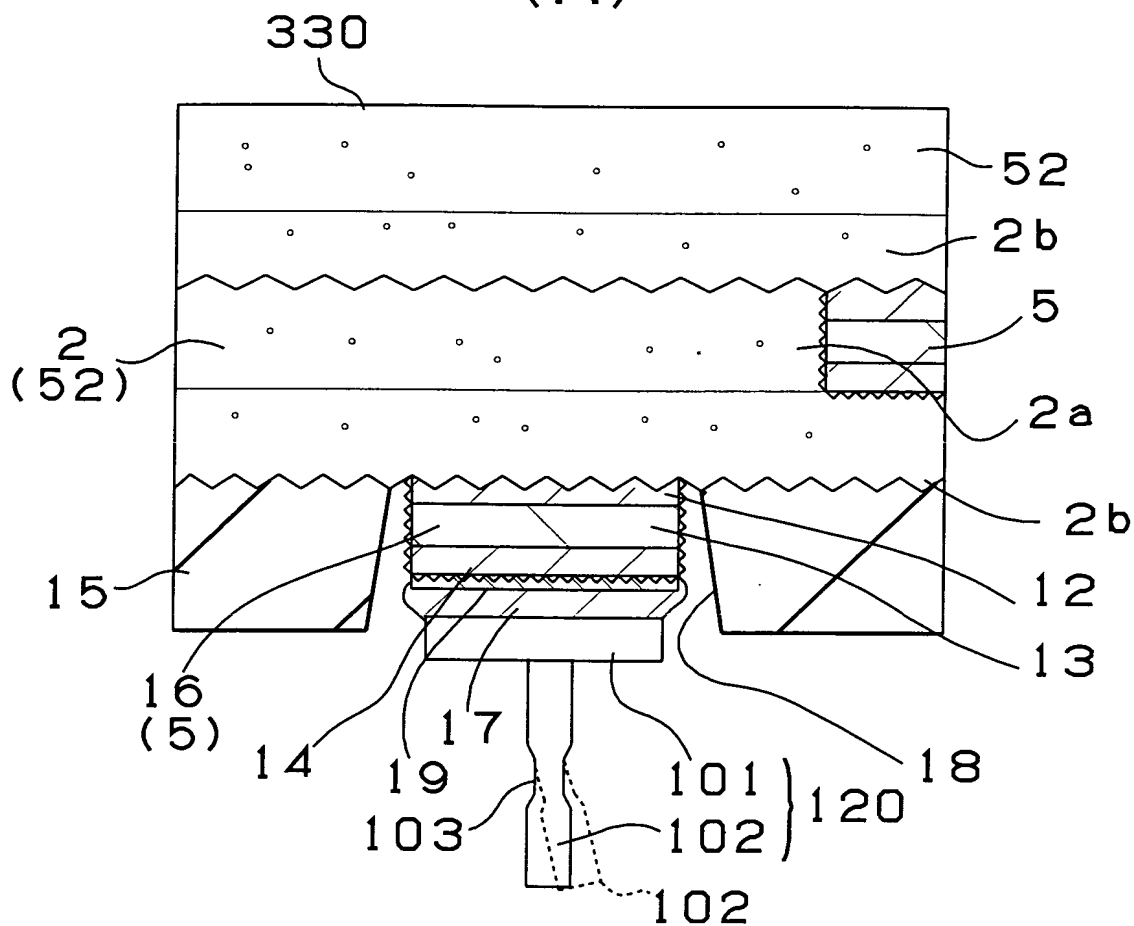
Fig. 30

	conductive connecting pin		after heating test					after heat cycle test			
	strength of adhesive bonding		state of pin	state of pin	strength of adhesive bonding		conduction test	state of pin	strength of adhesive bonding		conduction test
	minimum value	average value			minimum value	average value			minimum value	average value	
second embodiment	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
example 1 of second embodiment	2.0	3.0	OK	OK	2.0	3.0	OK	OK	1.9	3.0	OK
first modification	2.1	3.2	OK	OK	2.1	3.2	OK	OK	2.0	3.1	OK
example 1 of first modification	2.1	3.5	OK	OK	2.1	3.5	OK	OK	2.0	3.4	OK
example 2 of first modification	2.1	3.6	OK	OK	2.1	3.6	OK	OK	2.0	3.5	OK
example 3 of first modification	2.1	3.5	OK	OK	2.1	3.5	OK	OK	2.0	3.4	OK
second modification	2.0	3.0	OK	OK	2.0	3.0	OK	OK	1.9	2.8	OK
example 1 of second modification	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
example 2 of second modification	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
third modification	2.0	3.6	OK	OK	2.0	3.6	OK	OK	1.9	3.5	OK

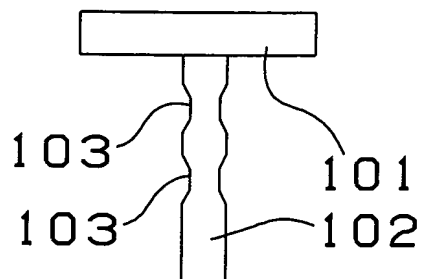


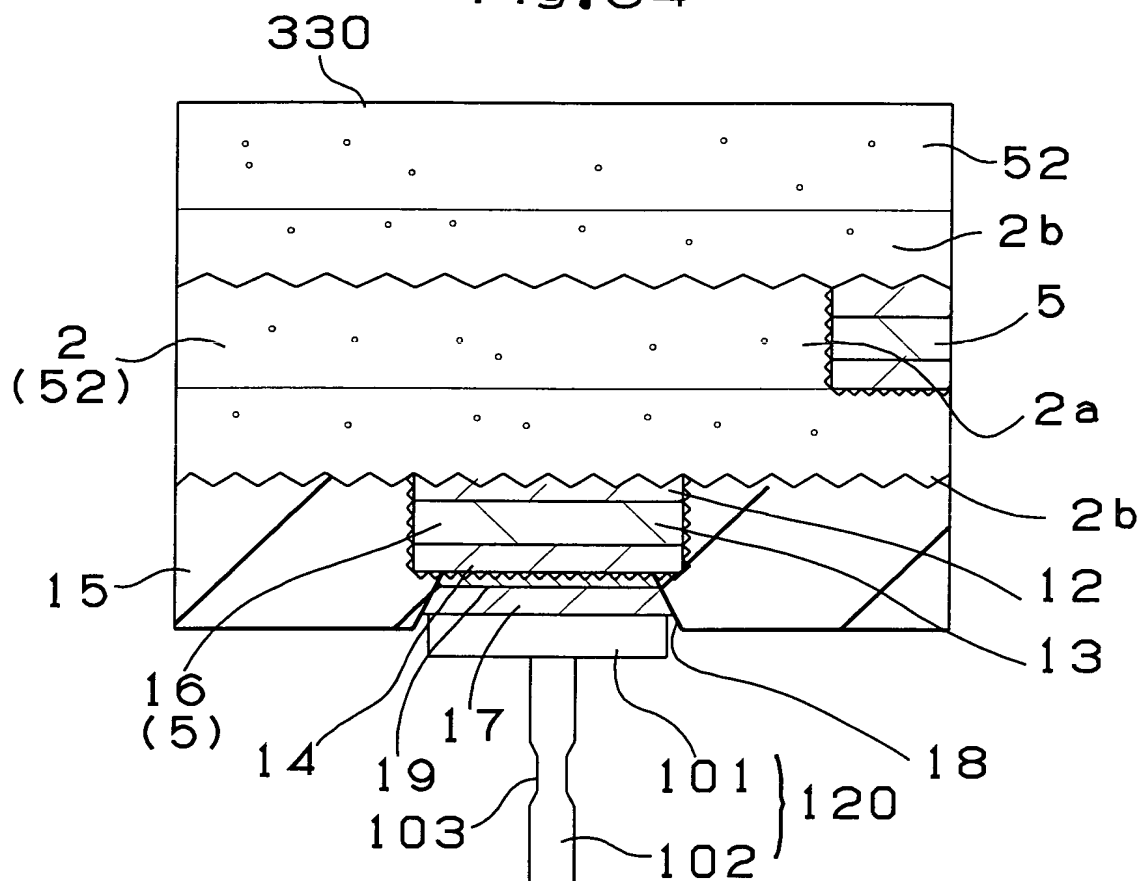


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Fig.33
(A)

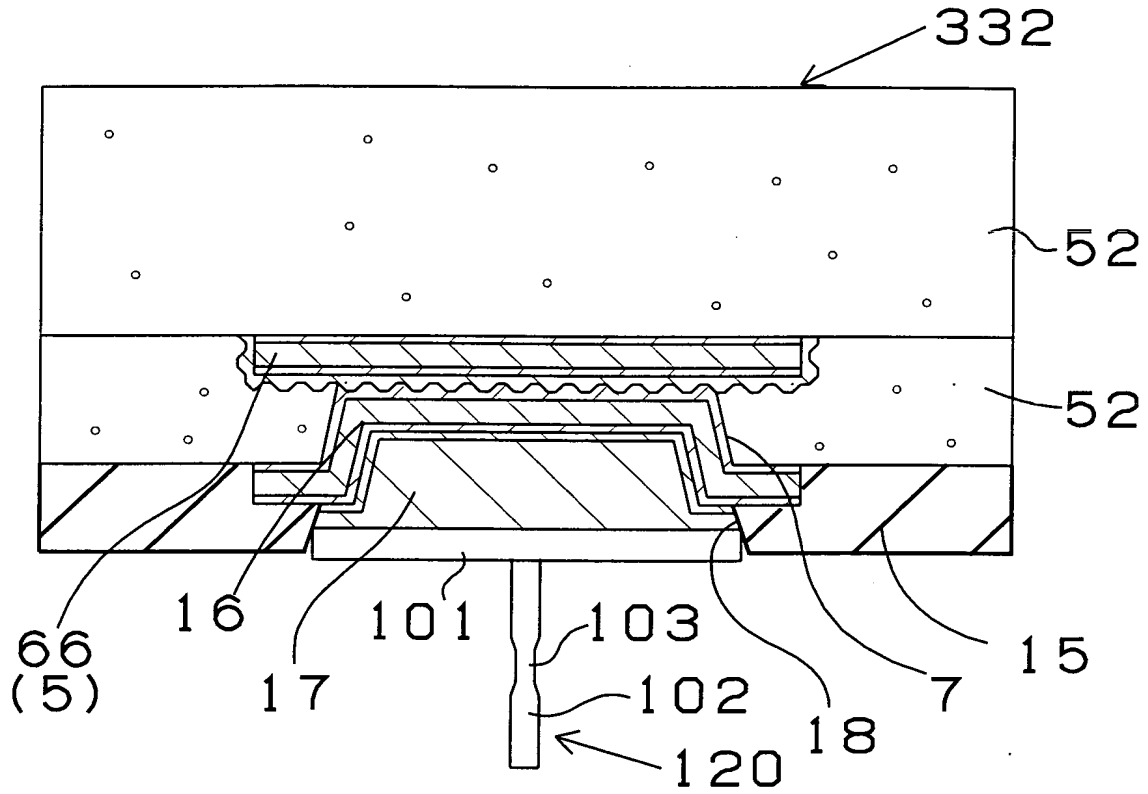


(B)

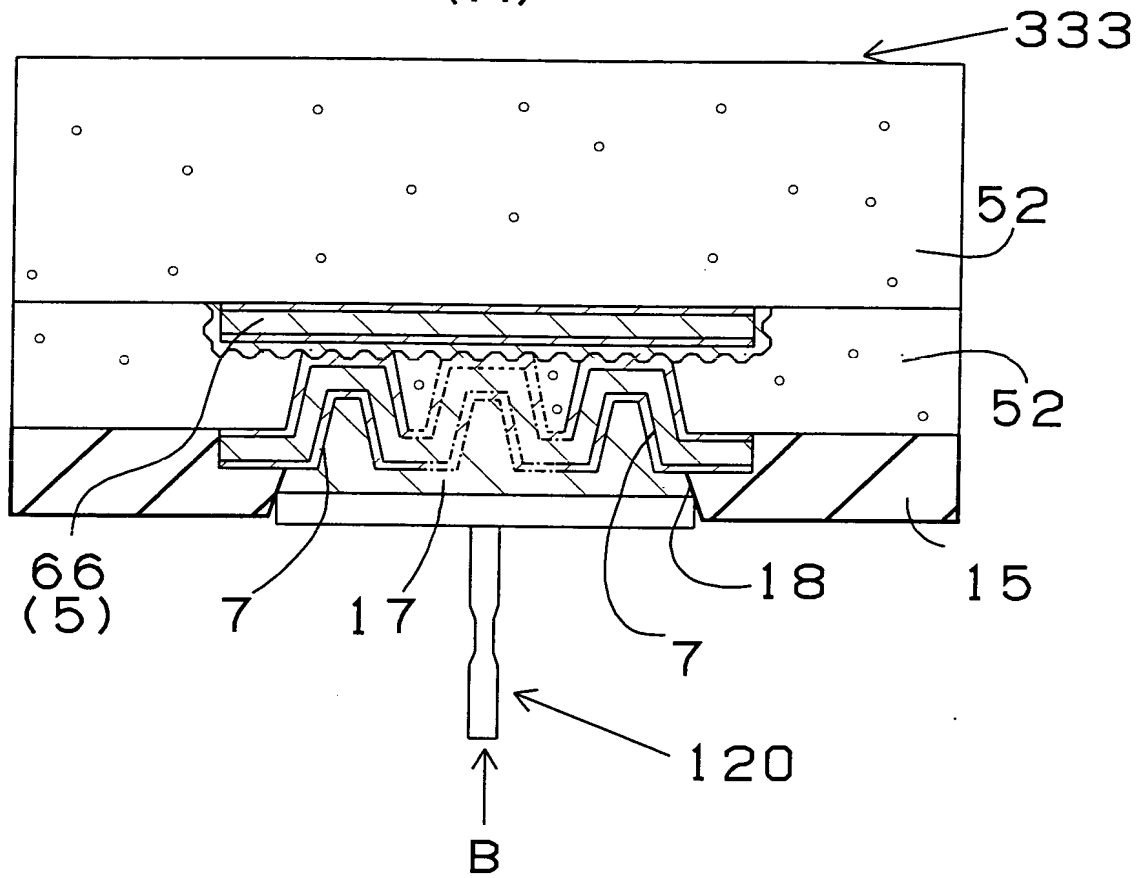


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Fig. 34

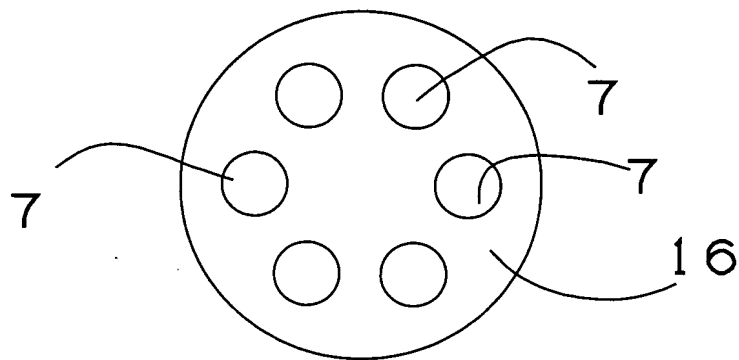
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Fig. 35



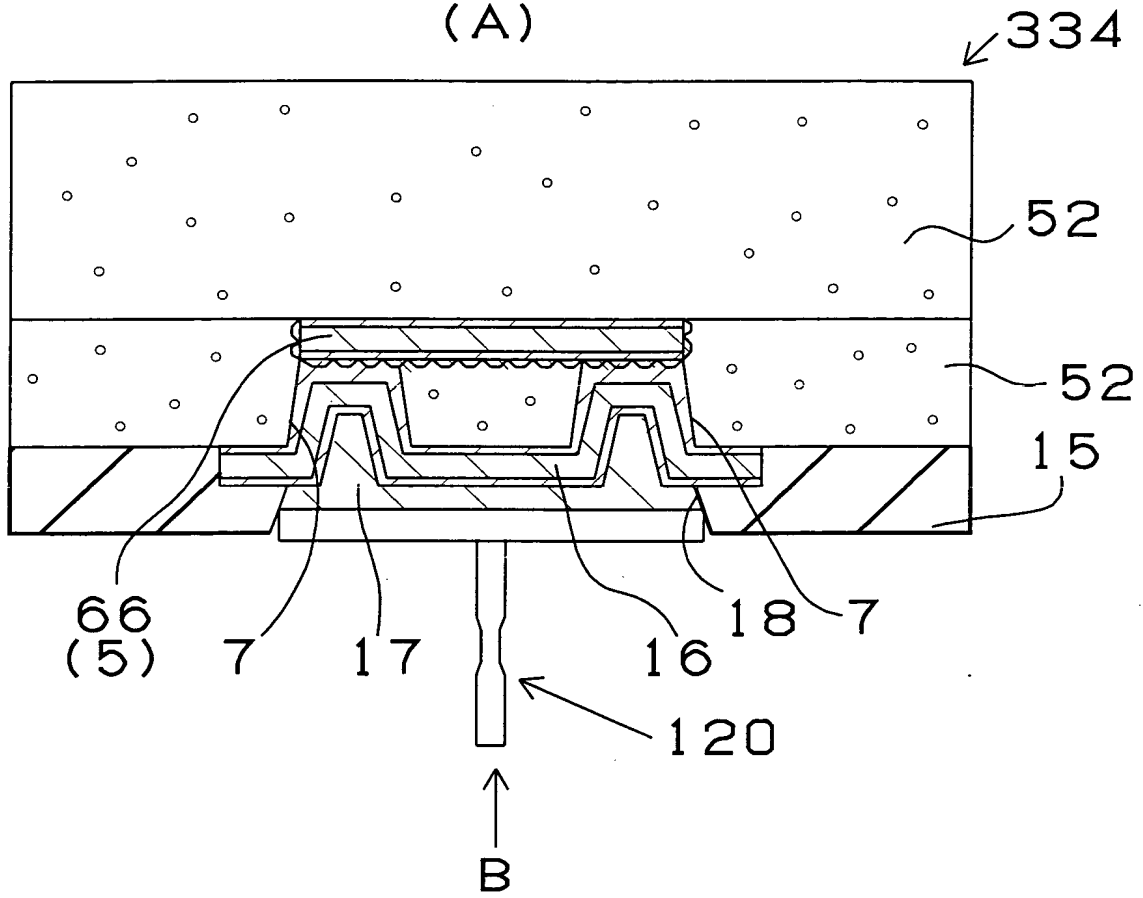
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Fig. 36
(A)



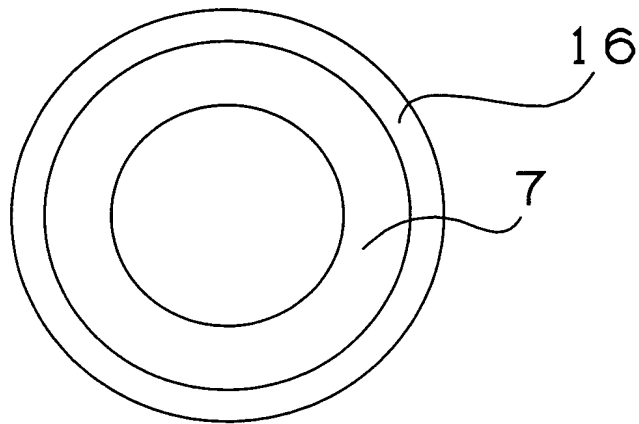
(B)



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Fig.37
(A)

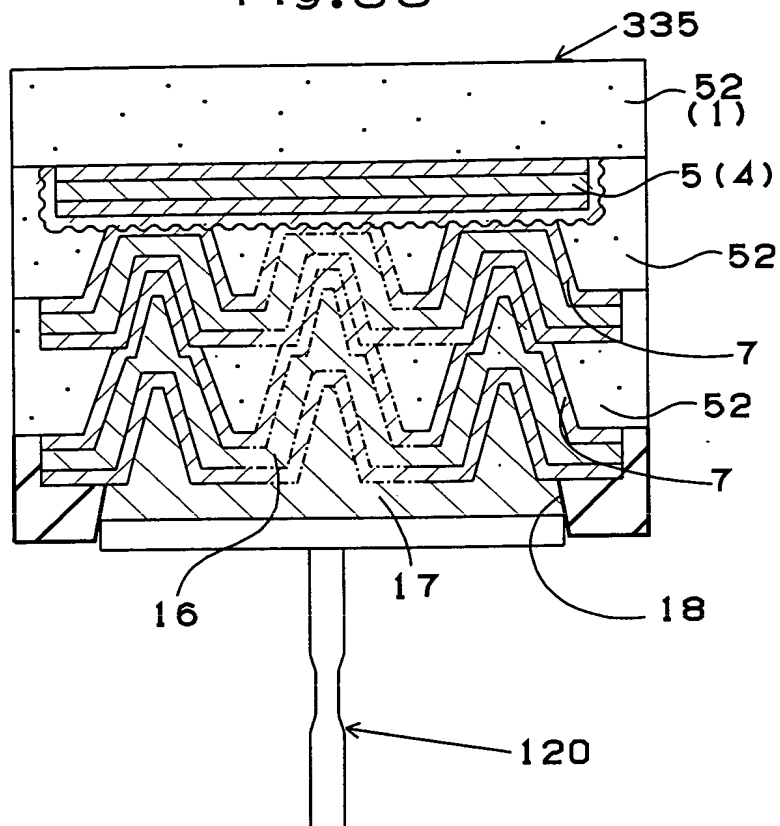


(B)

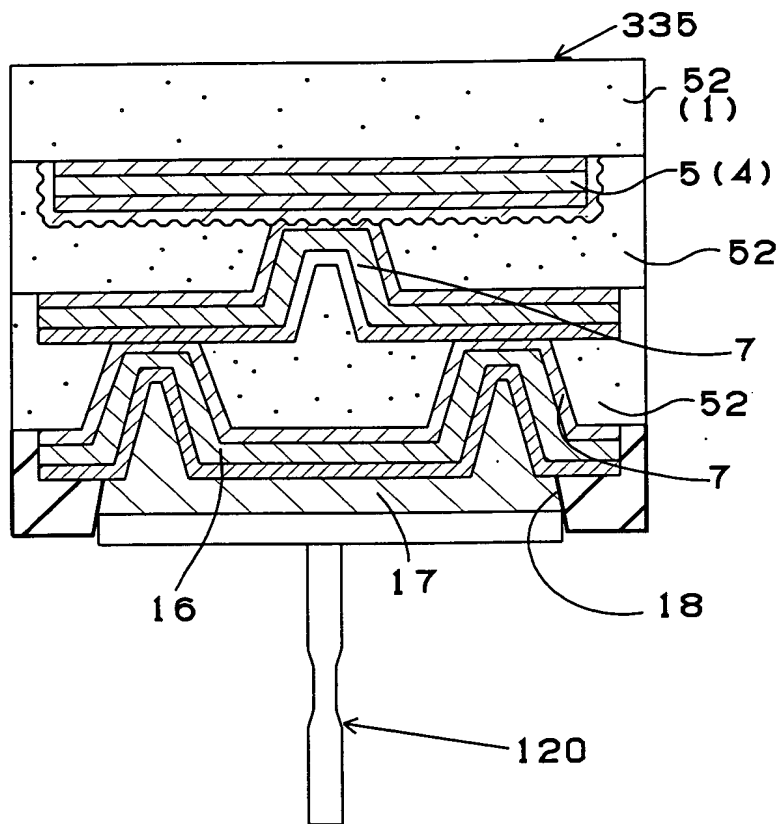


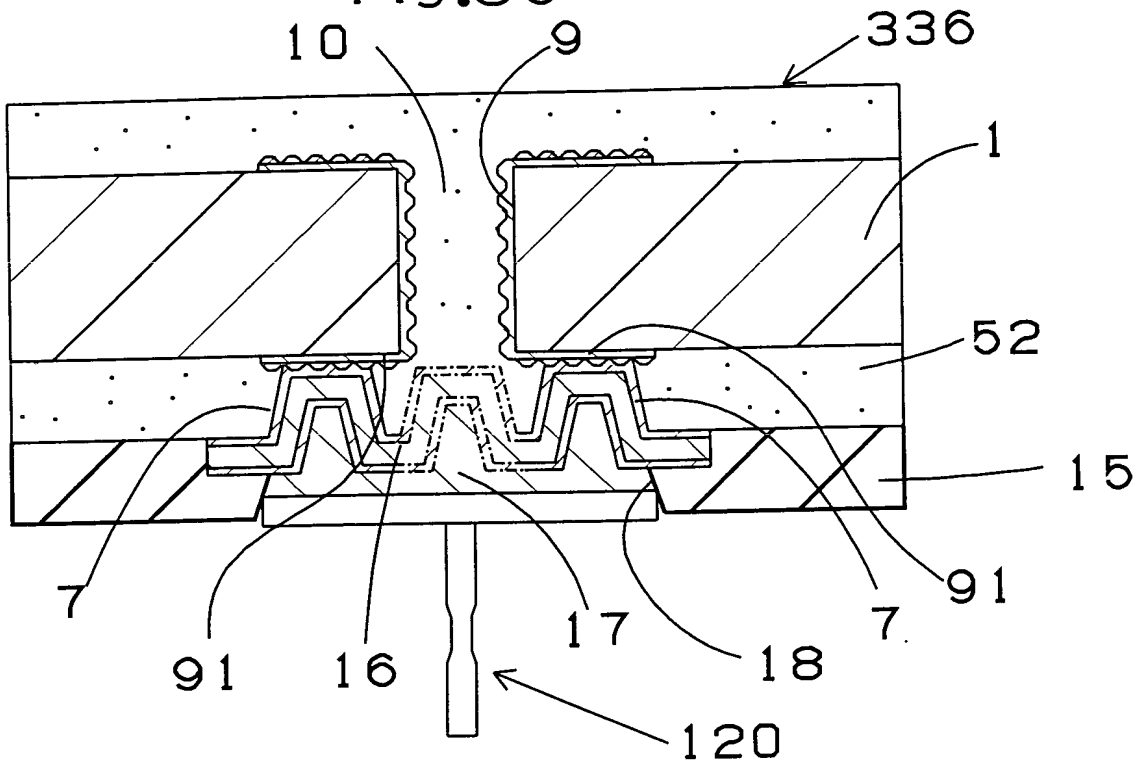
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Fig.38

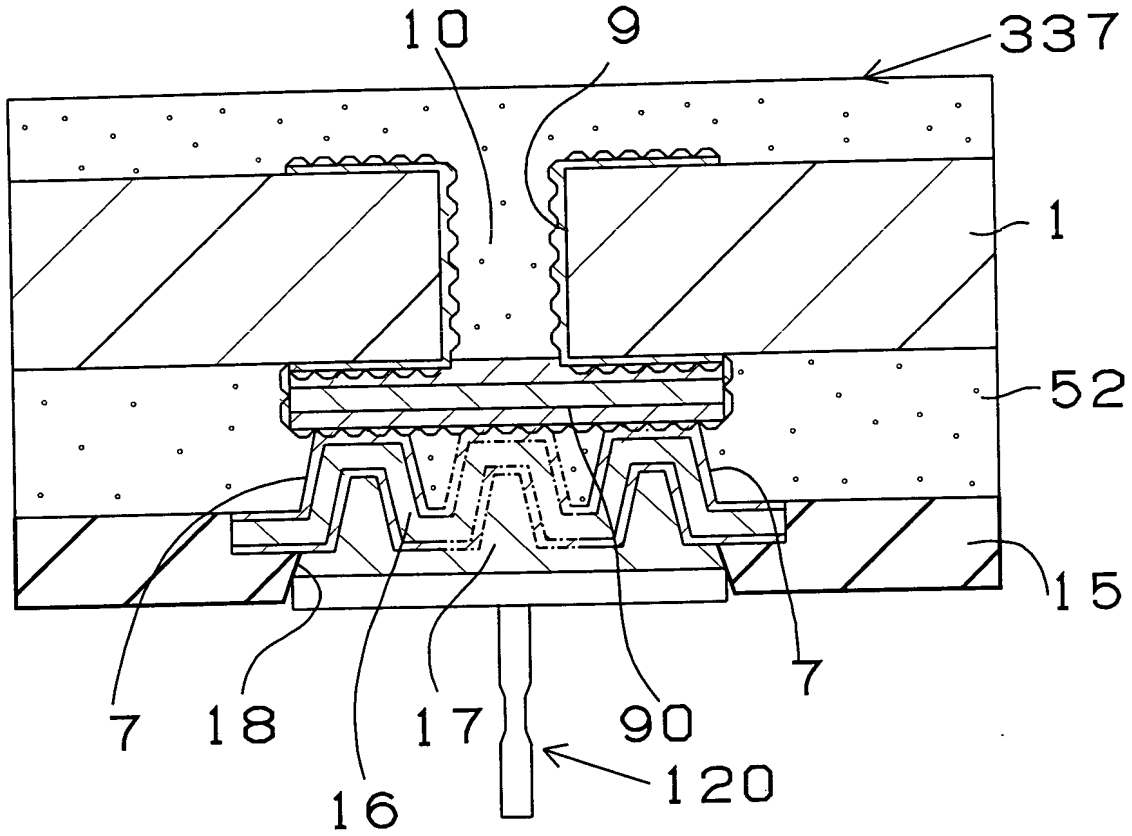
(A)

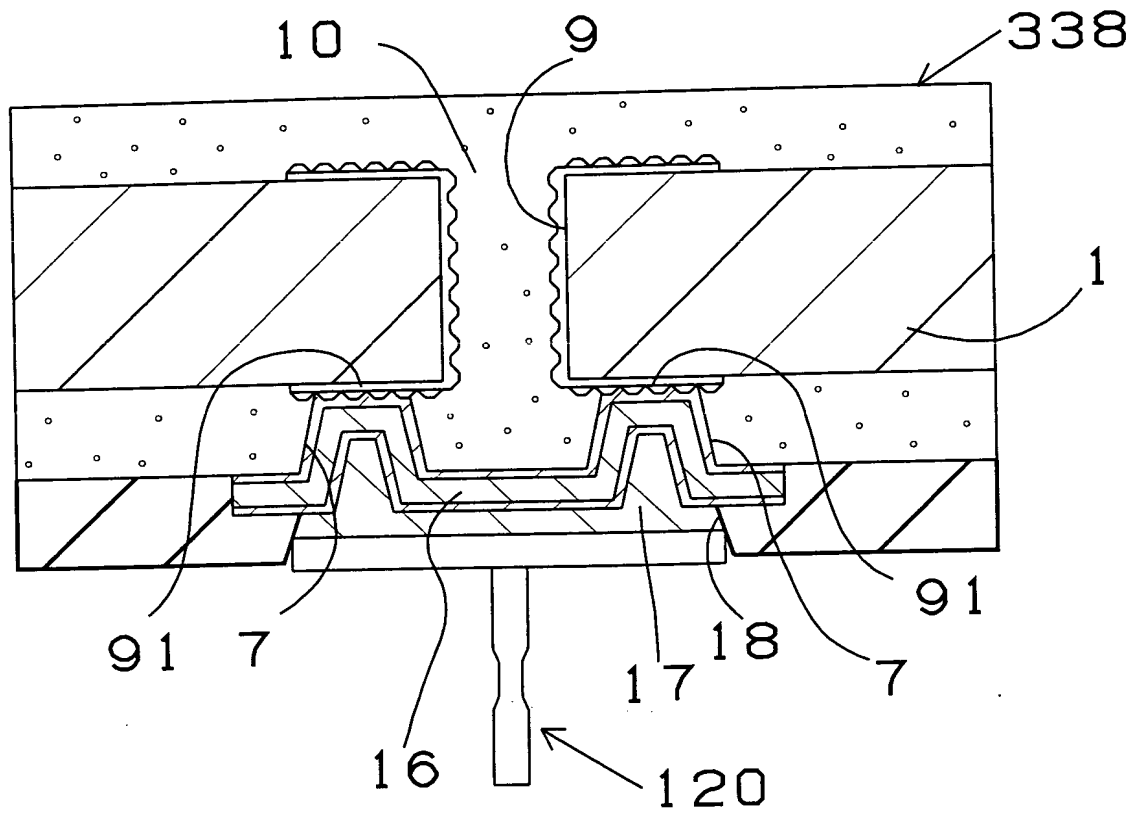


(B)



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Fig.39

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Fig. 40

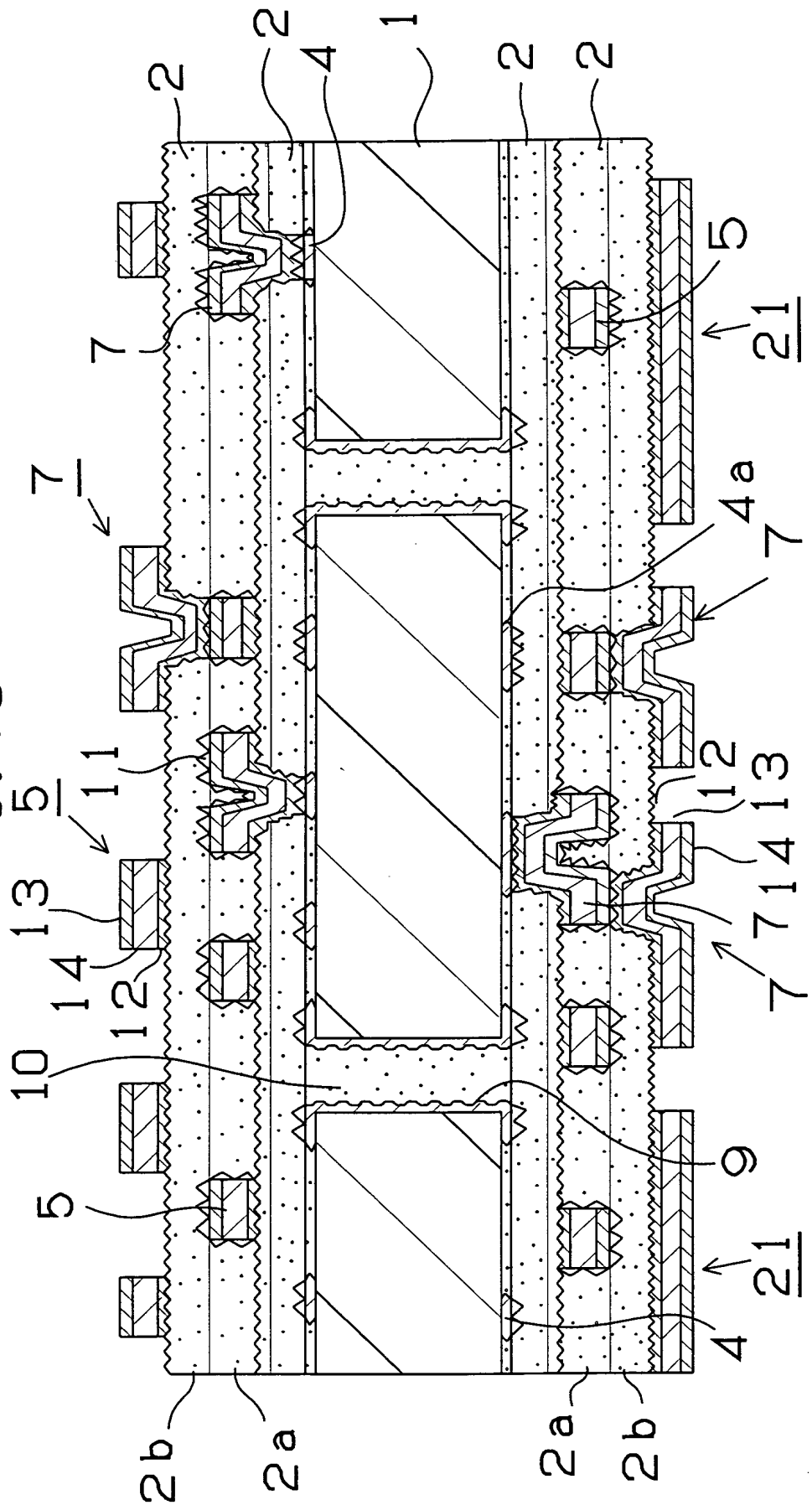
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Fig. 41

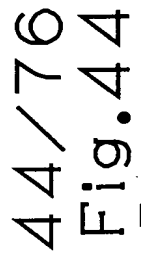
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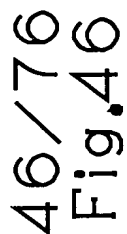
Fig. 42

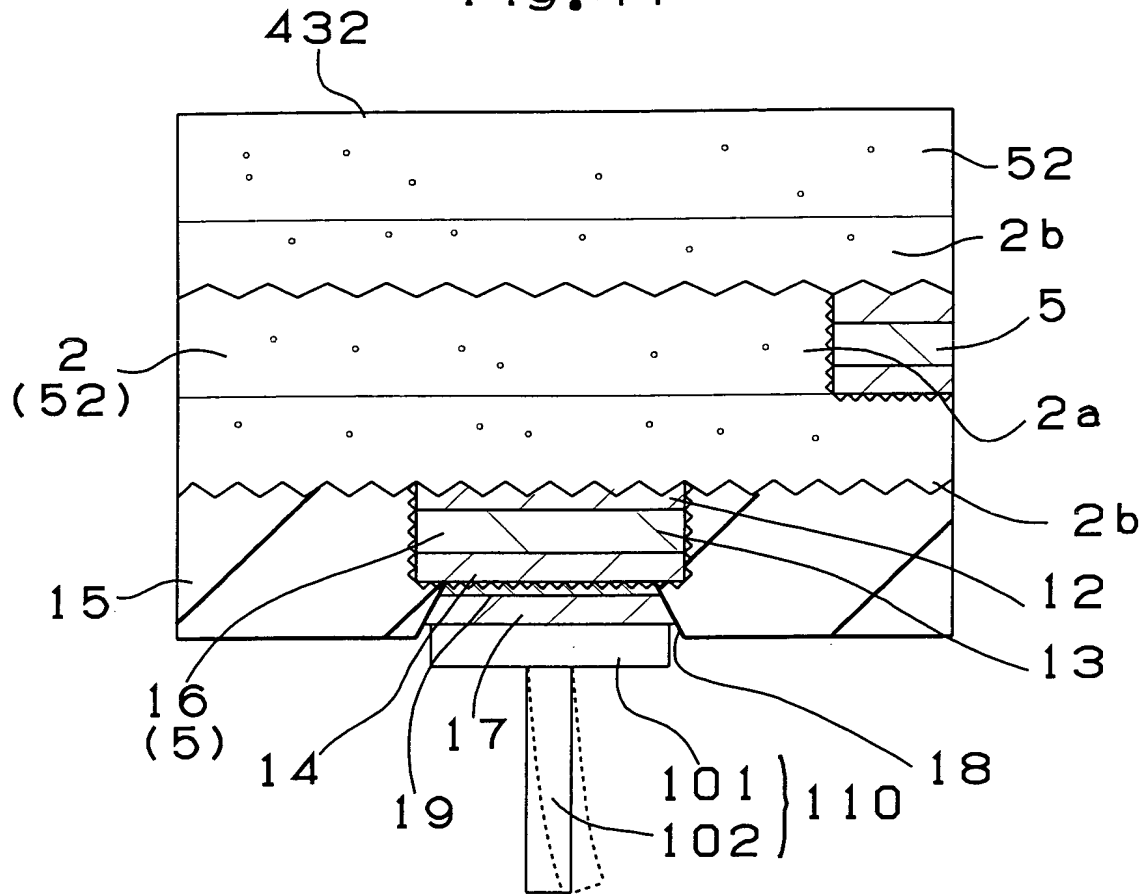
	conductive connecting pin		after heating test					after heat cycle test			
	strength of adhesive bonding		state of pin	state of pin	strength of adhesive bonding		conduction test	state of pin	strength of adhesive bonding		conduction test
	mini-mum value	ave-rage value			mini-mum value	ave-rage value			mini-mum value	ave-rage value	
third embodiment	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
example 1 of third embodiment	2.0	3.0	OK	OK	2.0	3.0	OK	OK	1.9	3.0	OK
first modification	2.1	3.2	OK	OK	2.1	3.2	OK	OK	2.0	3.1	OK
example 1 of first modification	2.1	3.5	OK	OK	2.1	3.5	OK	OK	2.0	3.4	OK
example 2 of first modification	2.1	3.6	OK	OK	2.1	3.6	OK	OK	2.0	3.5	OK
example 3 of first modification	2.1	3.5	OK	OK	2.1	3.5	OK	OK	2.0	3.4	OK
second modification	2.0	3.0	OK	OK	2.0	3.0	OK	OK	1.9	2.8	OK
example 1 of second modification	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
example 2 of second modification	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
third modification	2.0	3.6	OK	OK	2.0	3.6	OK	OK	1.9	3.5	OK

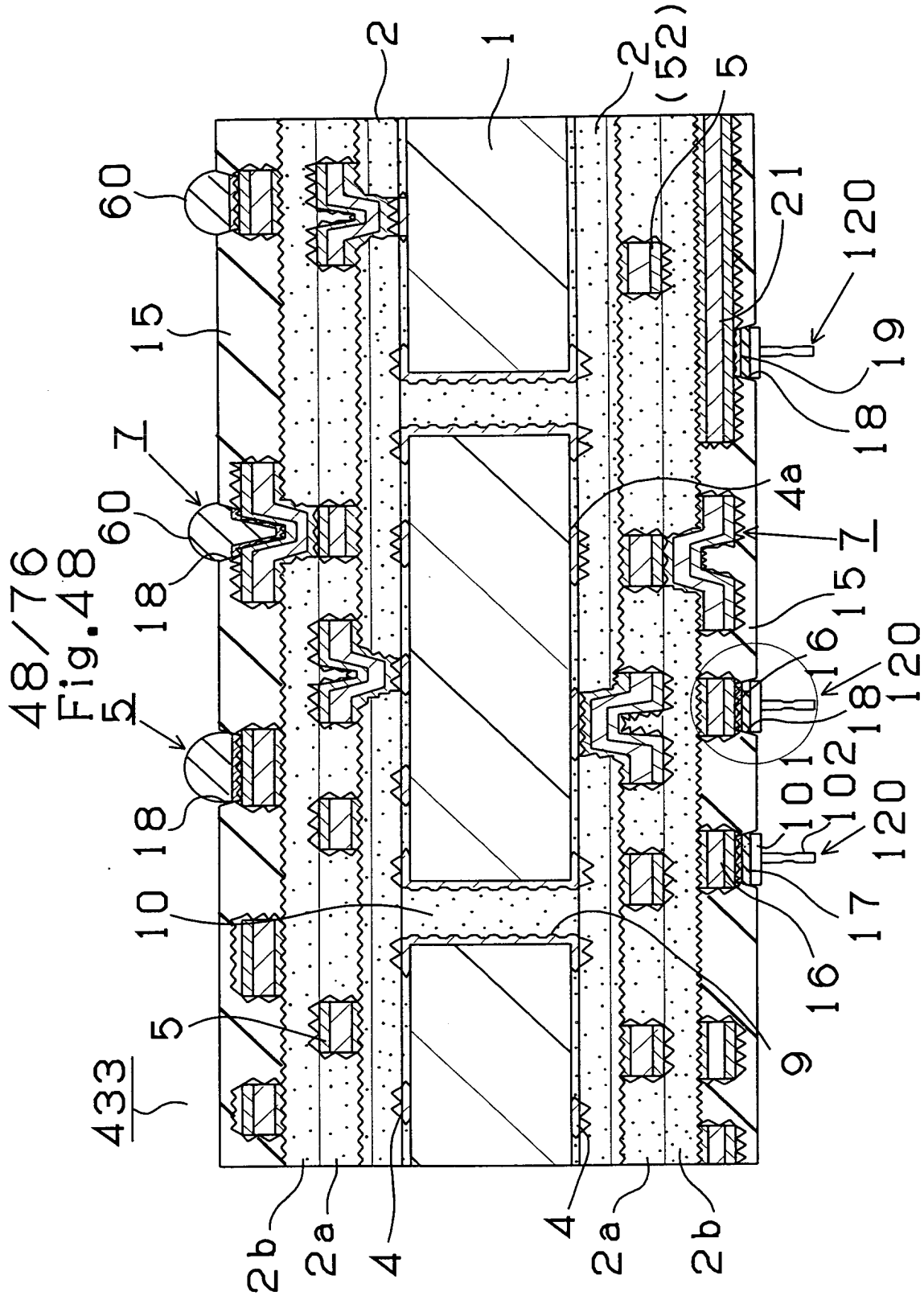
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Fig. 43

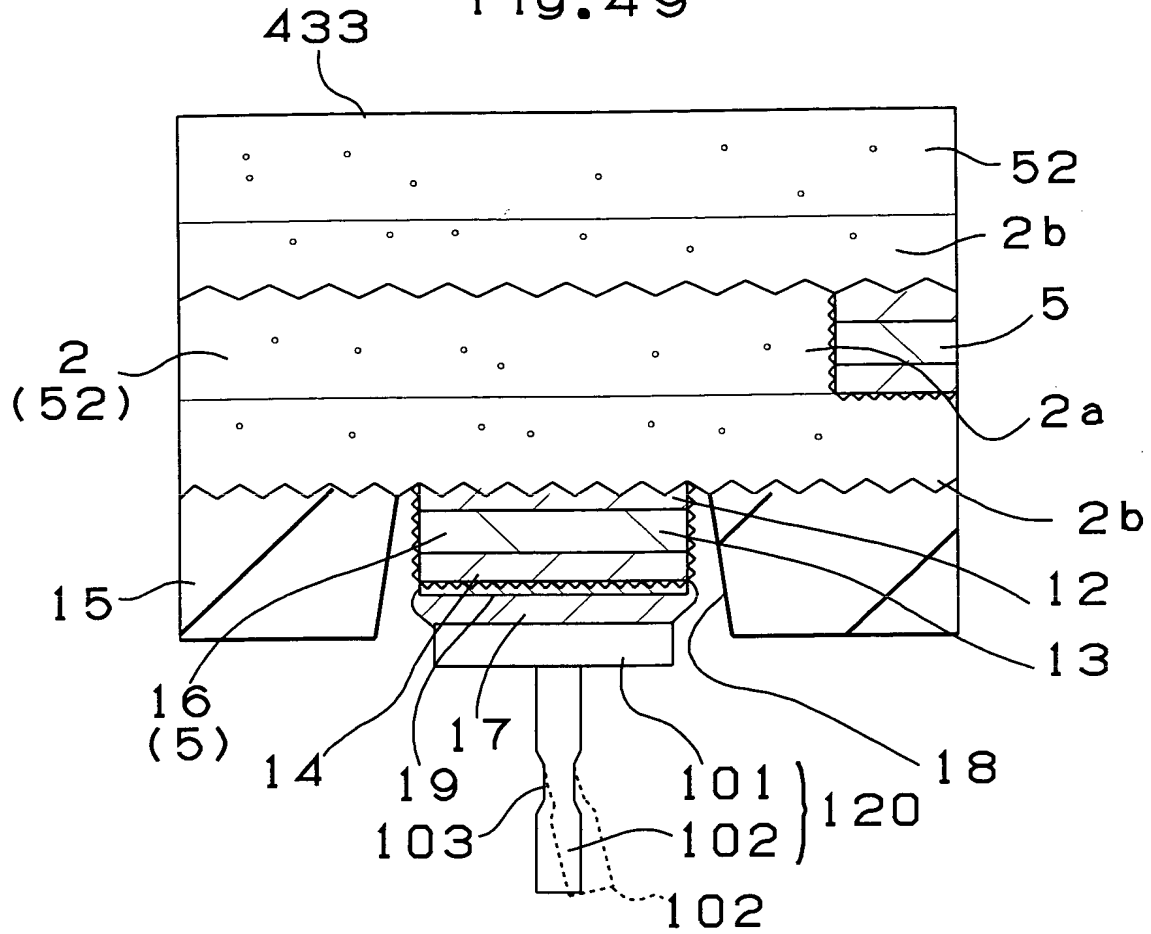




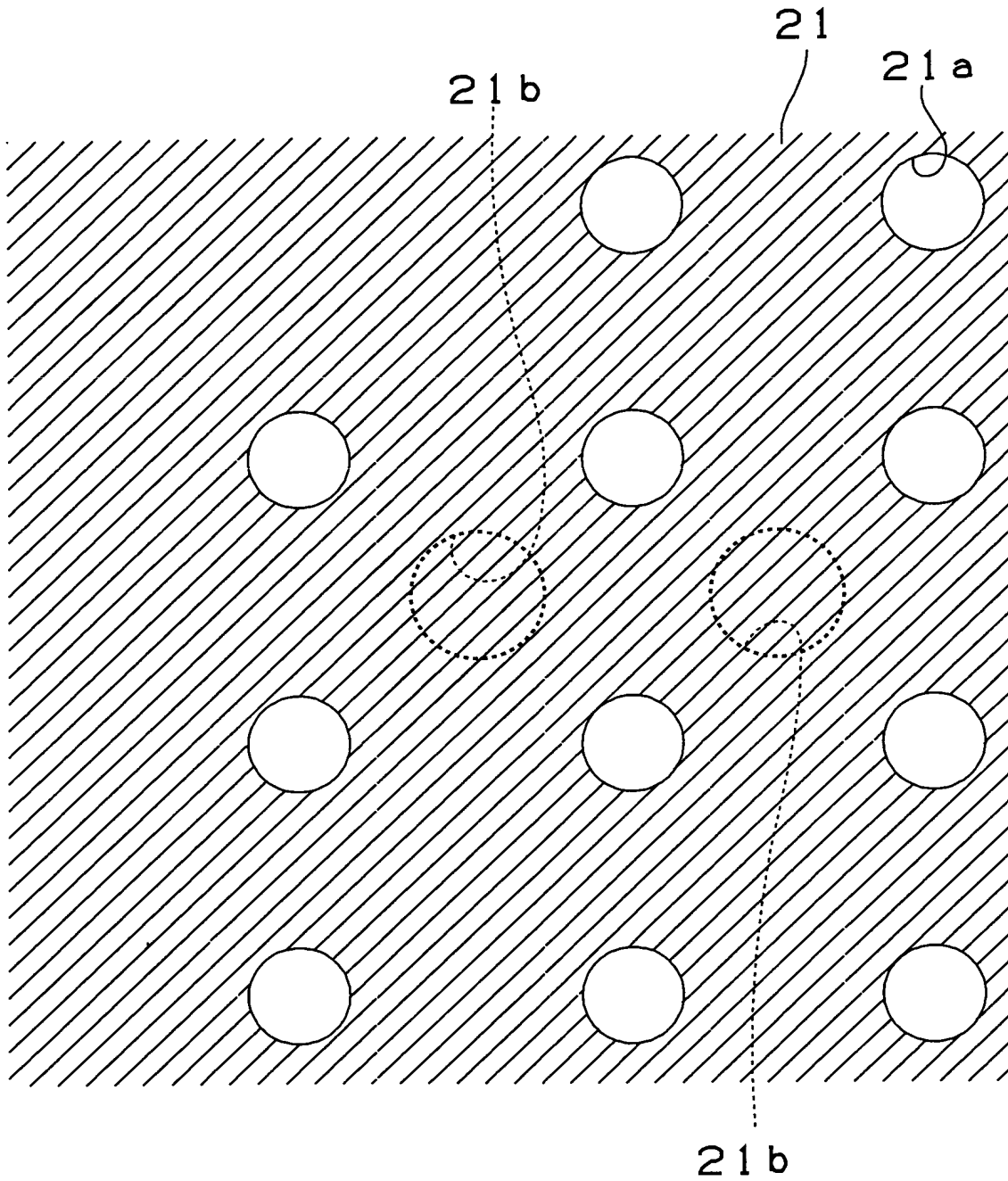


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Fig. 47



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Fig. 49

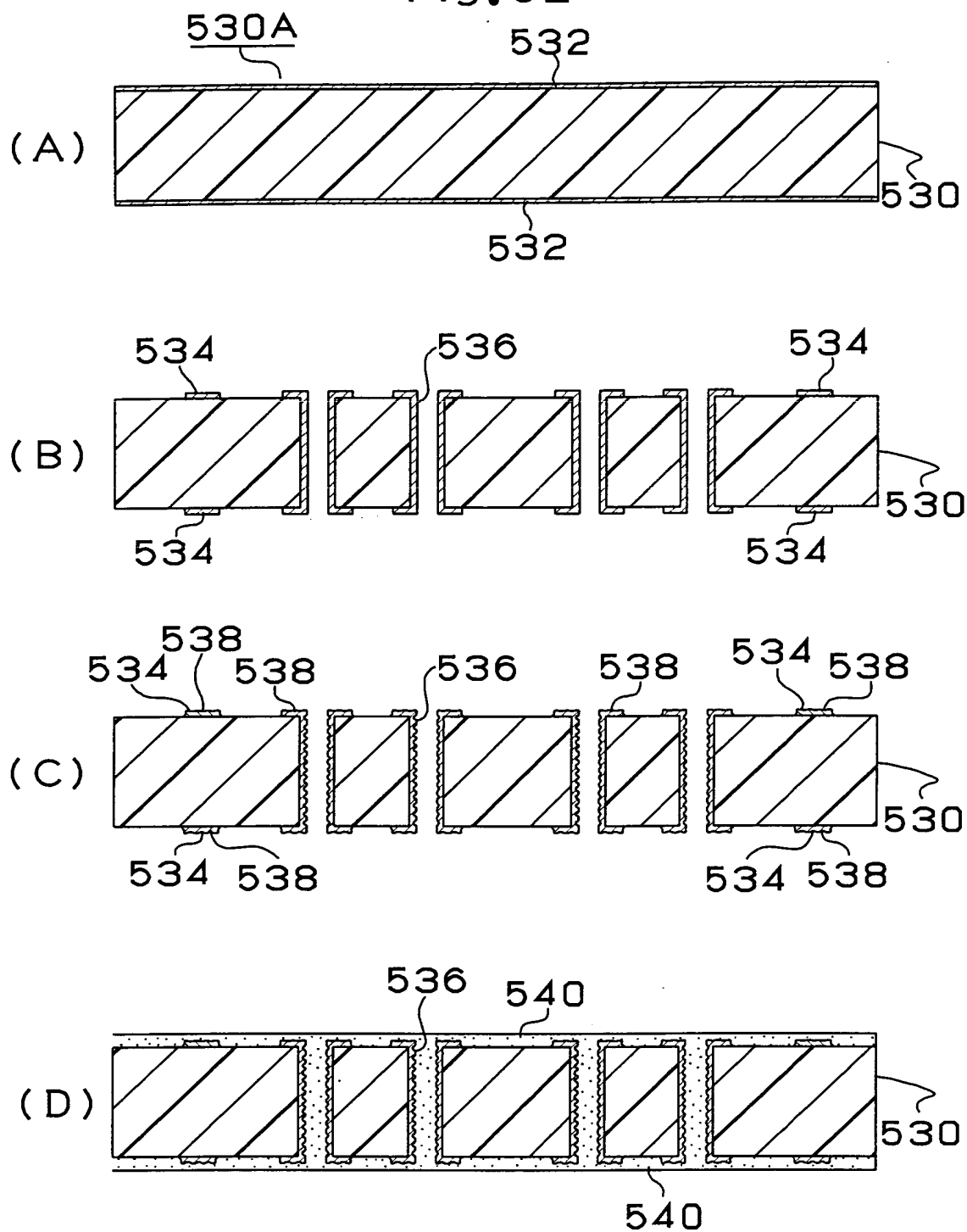
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Fig. 50



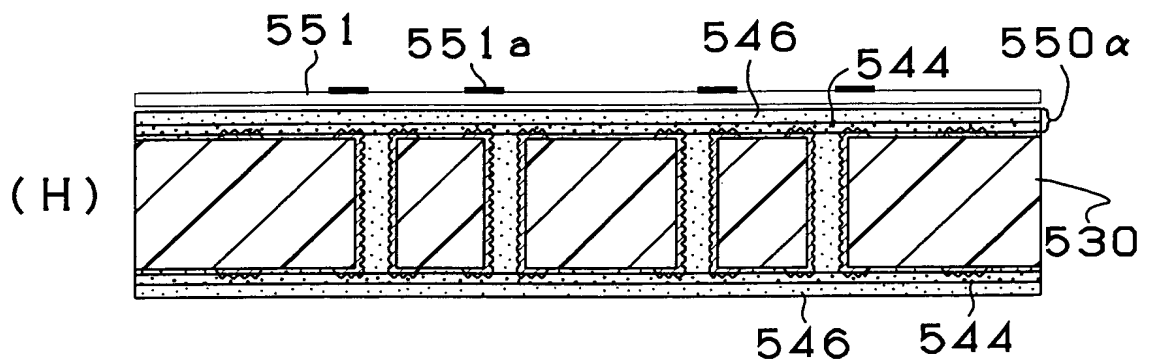
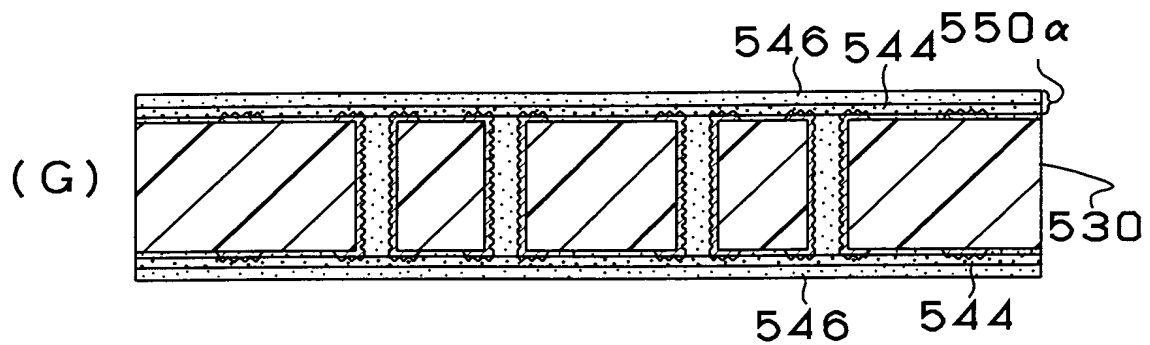
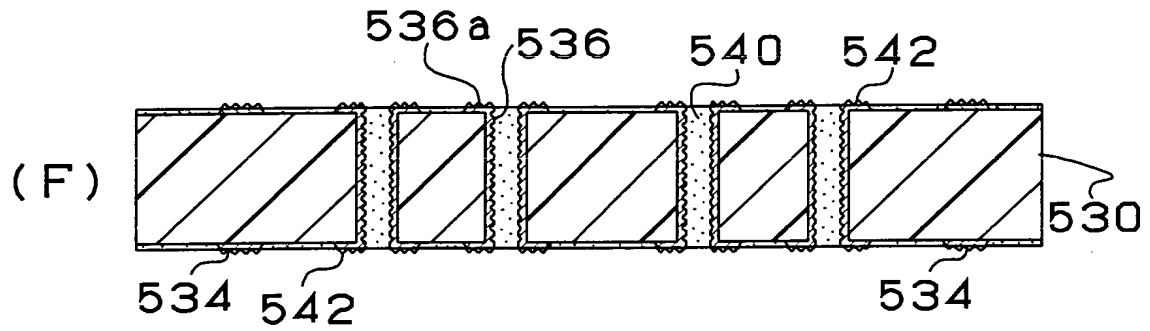
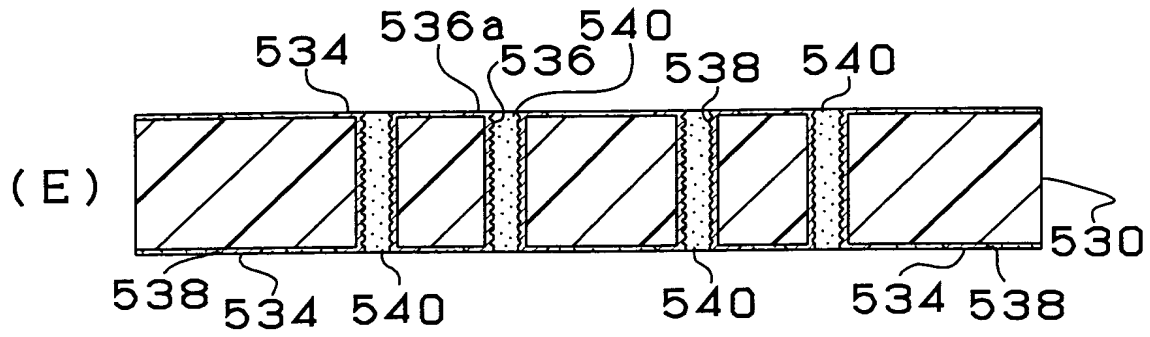
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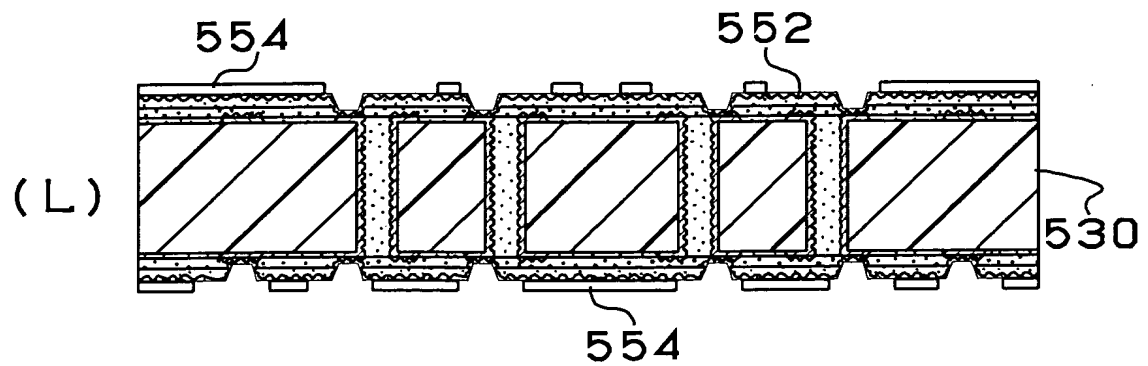
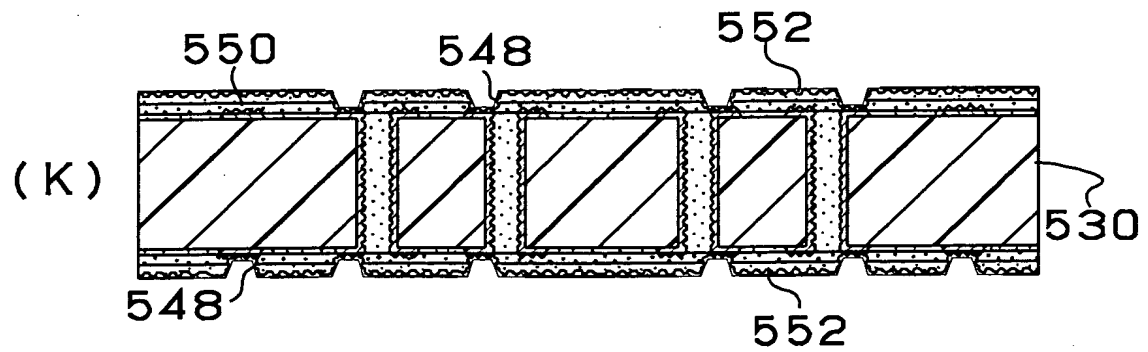
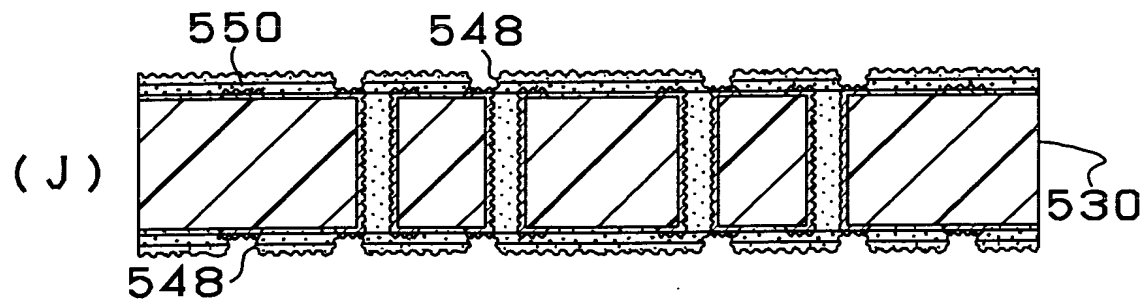
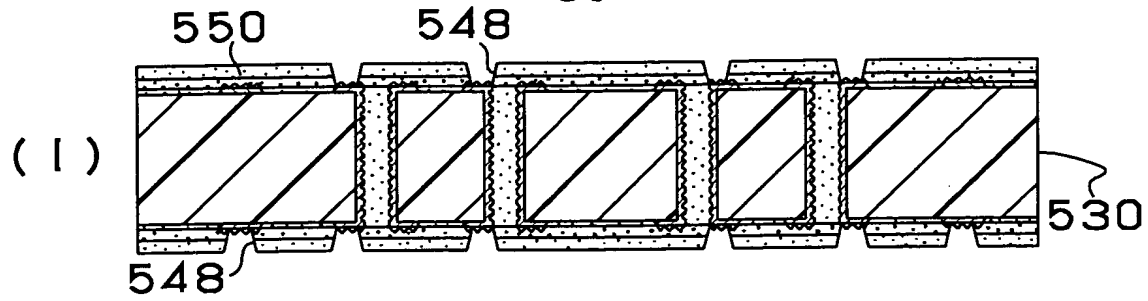
Fig. 51

	conductive connecting pin		after heating test					after heat cycle test			
	strength of adhesive bonding		state of pin	state of pin	strength of adhesive bonding		conduction test	state of pin	strength of adhesive bonding		conduction test
	mini-mum value	ave-rage value			mini-mum value	ave-rage value			mini-mum value	ave-rage value	
fourth embodiment	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
first modification	2.0	3.2	OK	OK	2.0	3.2	OK	OK	1.9	3.1	OK
second modification	2.0	3.0	OK	OK	2.0	3.0	OK	OK	1.9	2.9	OK
third modification	2.1	3.6	OK	OK	2.1	3.6	OK	OK	2.0	3.5	OK

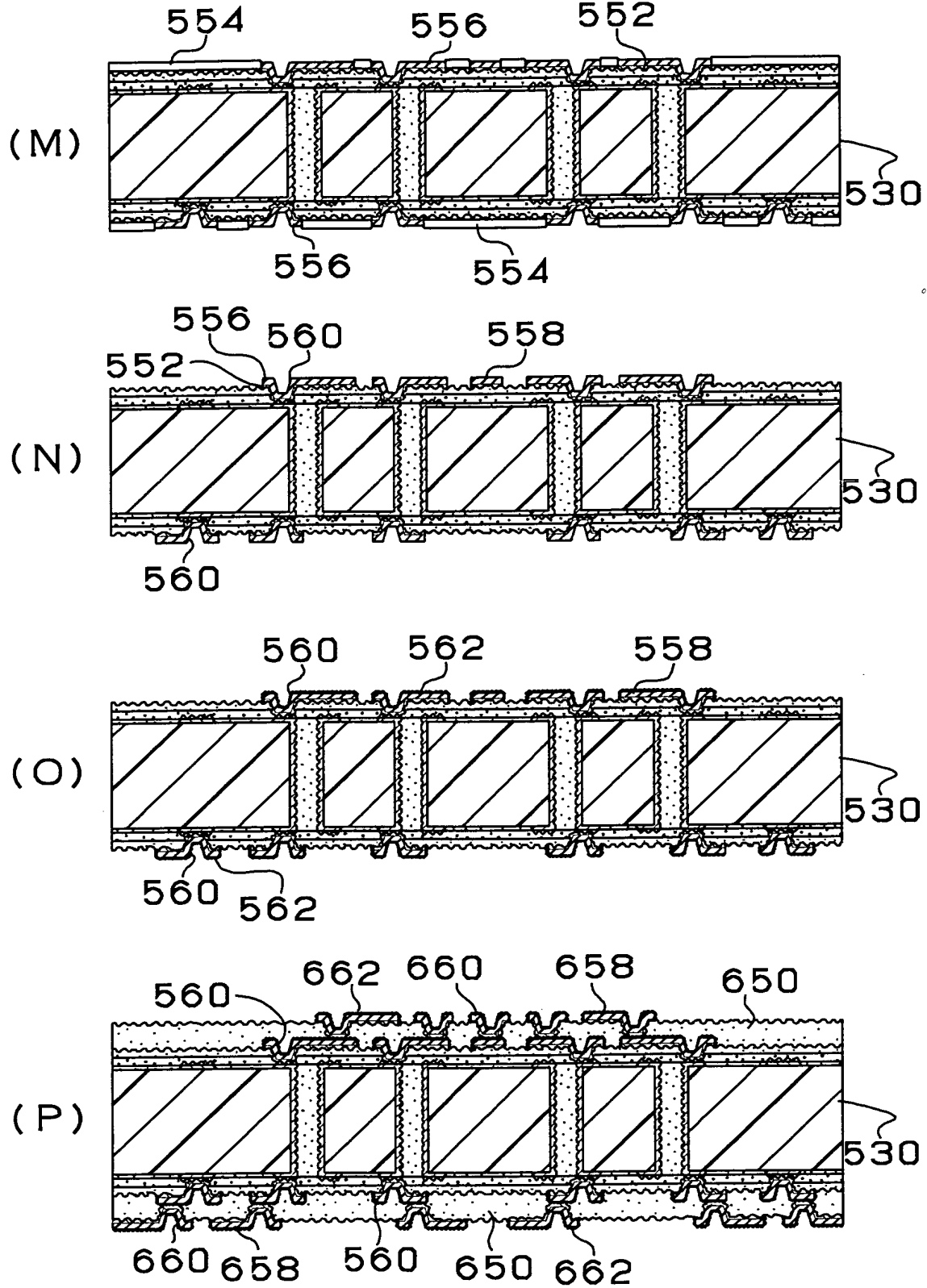
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Fig. 52

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Fig. 53

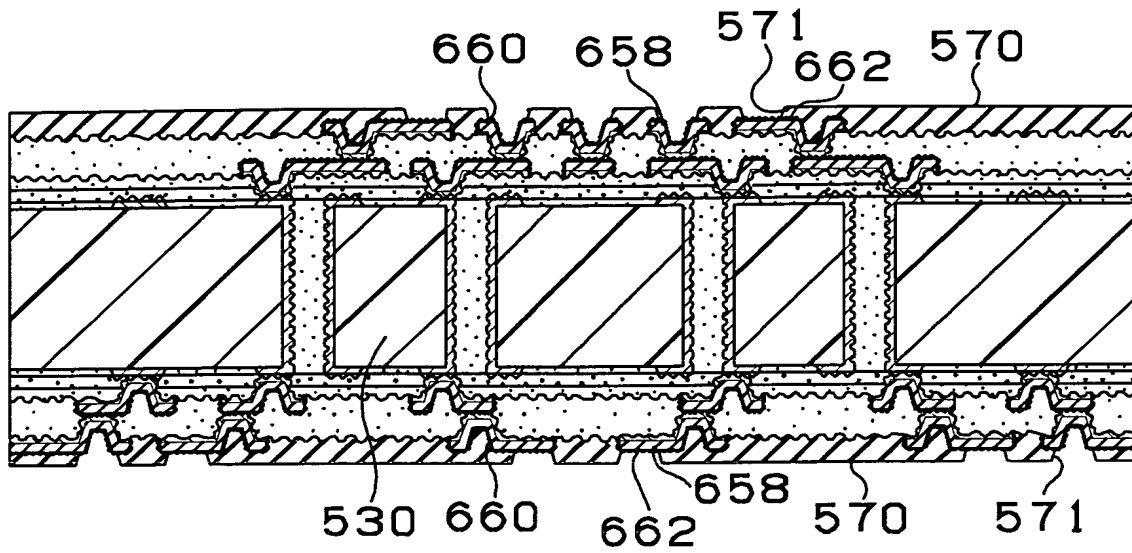


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Fig. 54

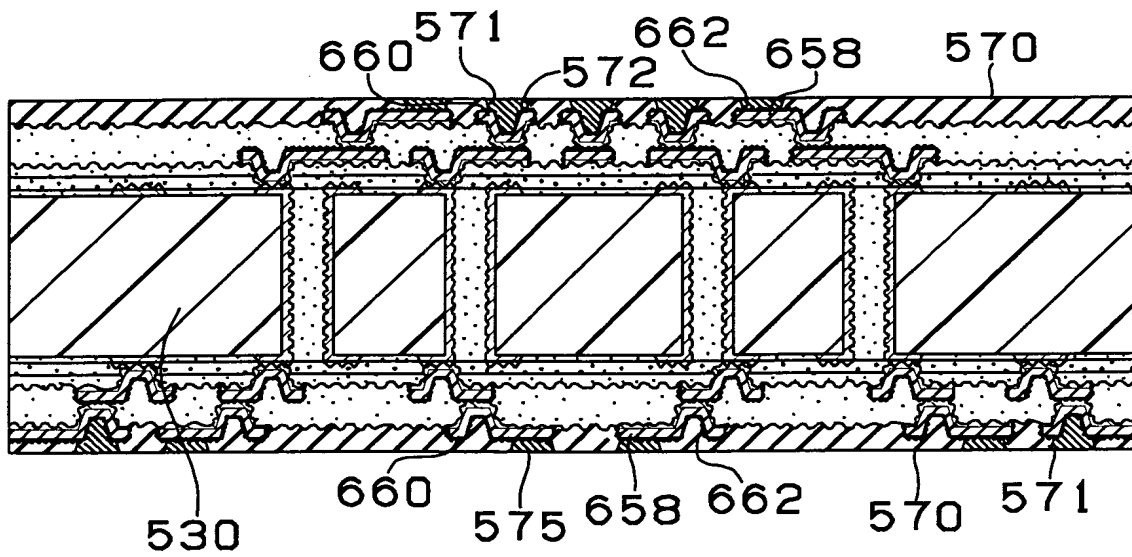
55/76
Fig. 55



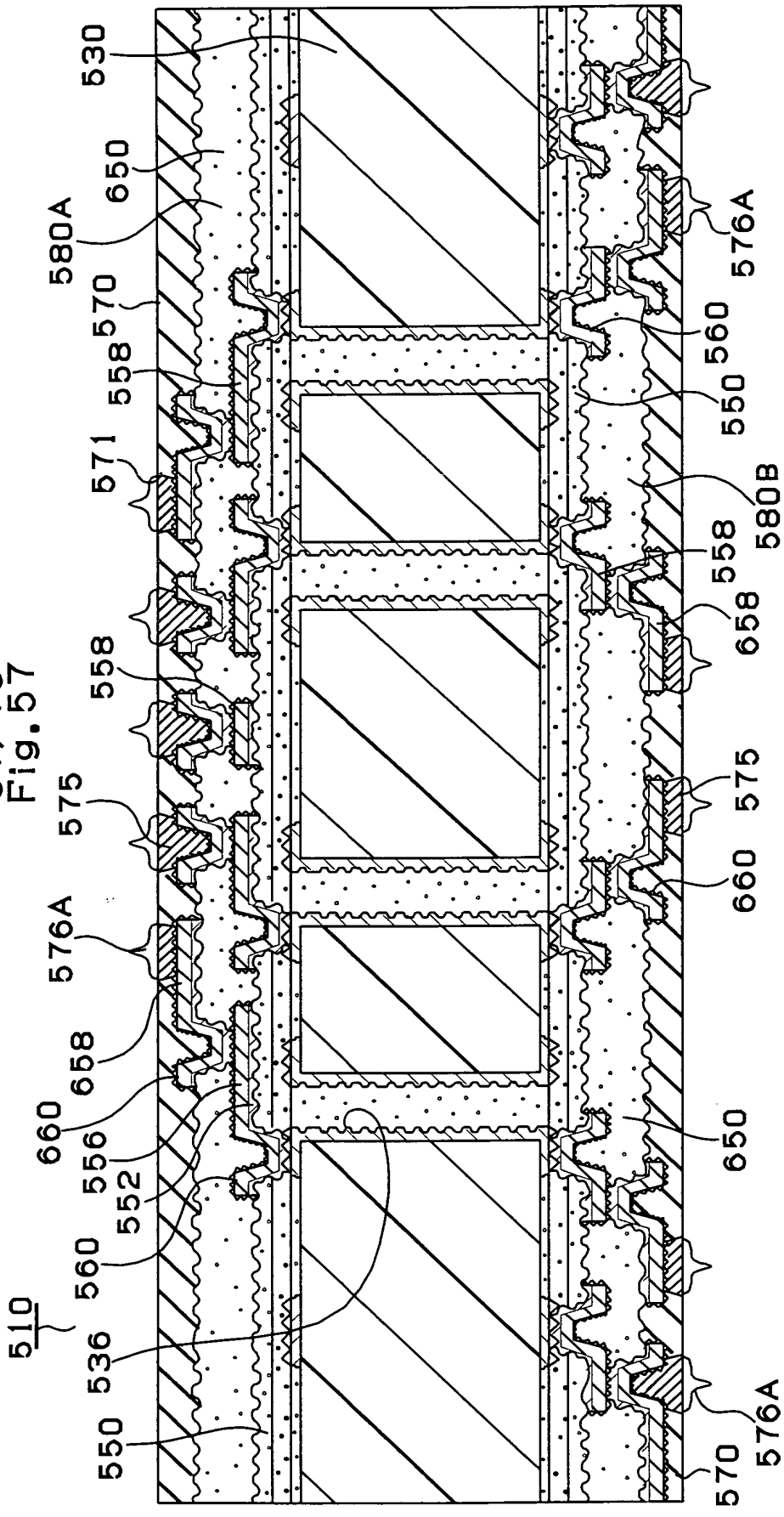
56/76
Fig. 56
(Q)



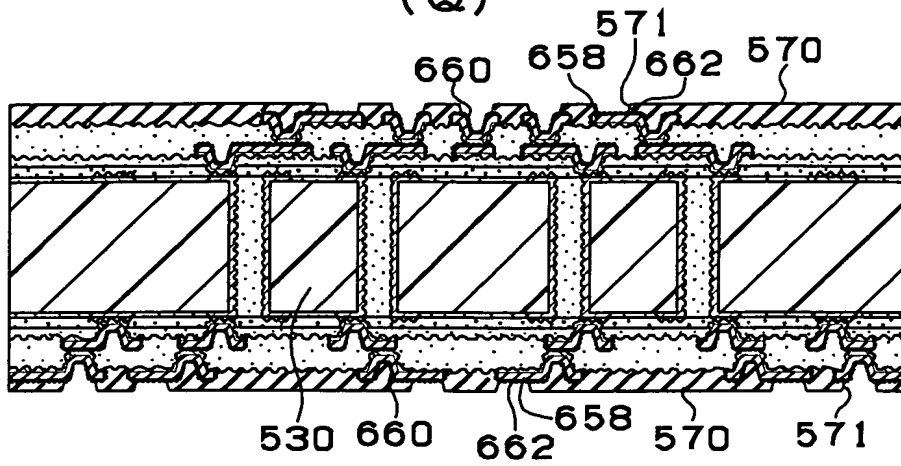
(R)



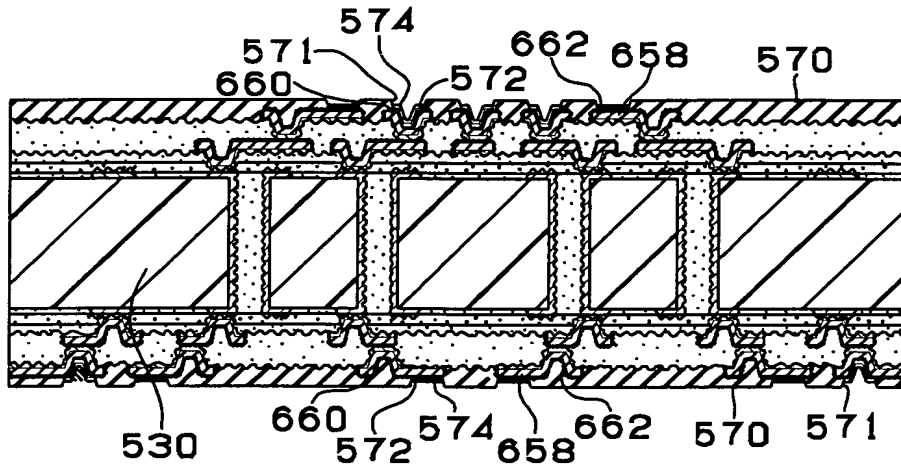
57/76
Fig. 57



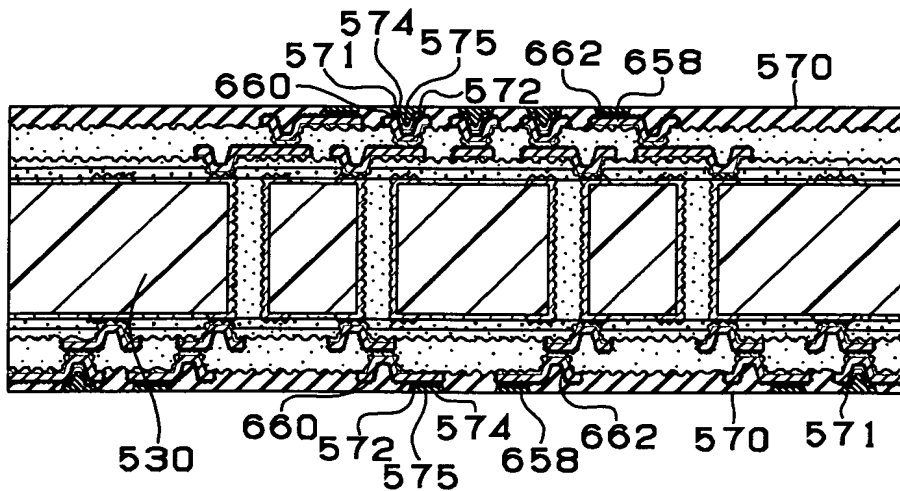
58/76
Fig. 58
(Q)



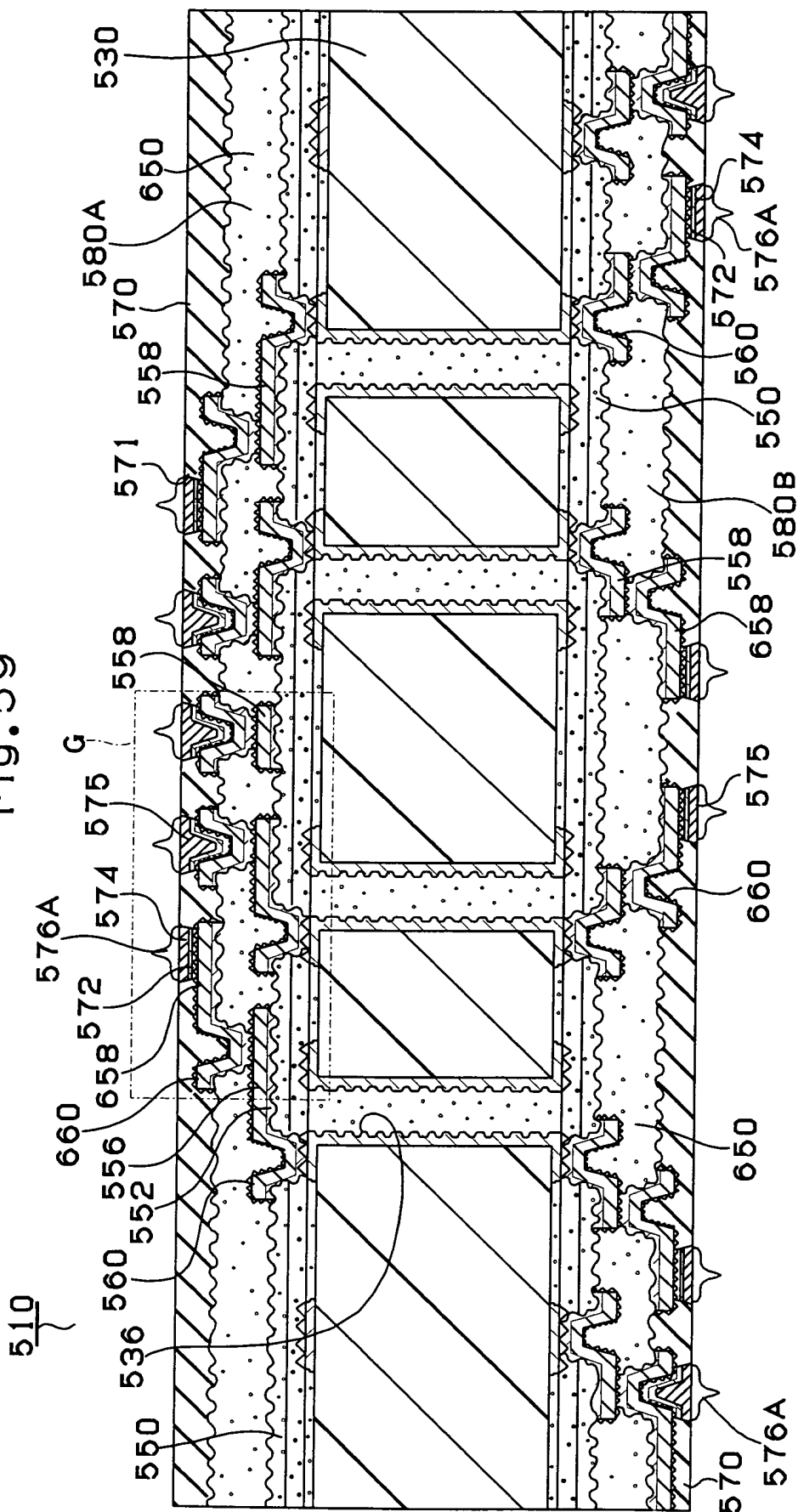
(R)



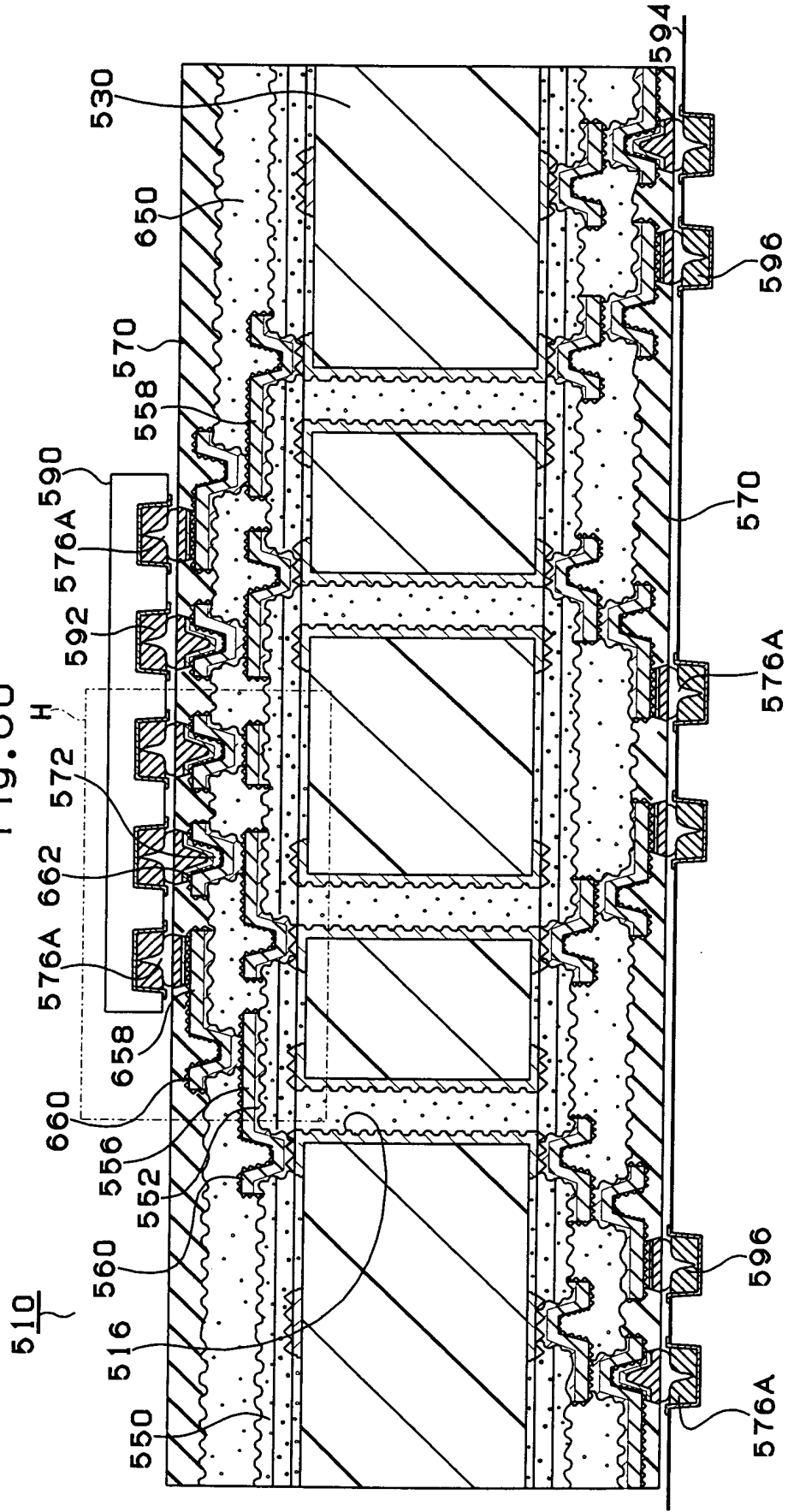
(S)



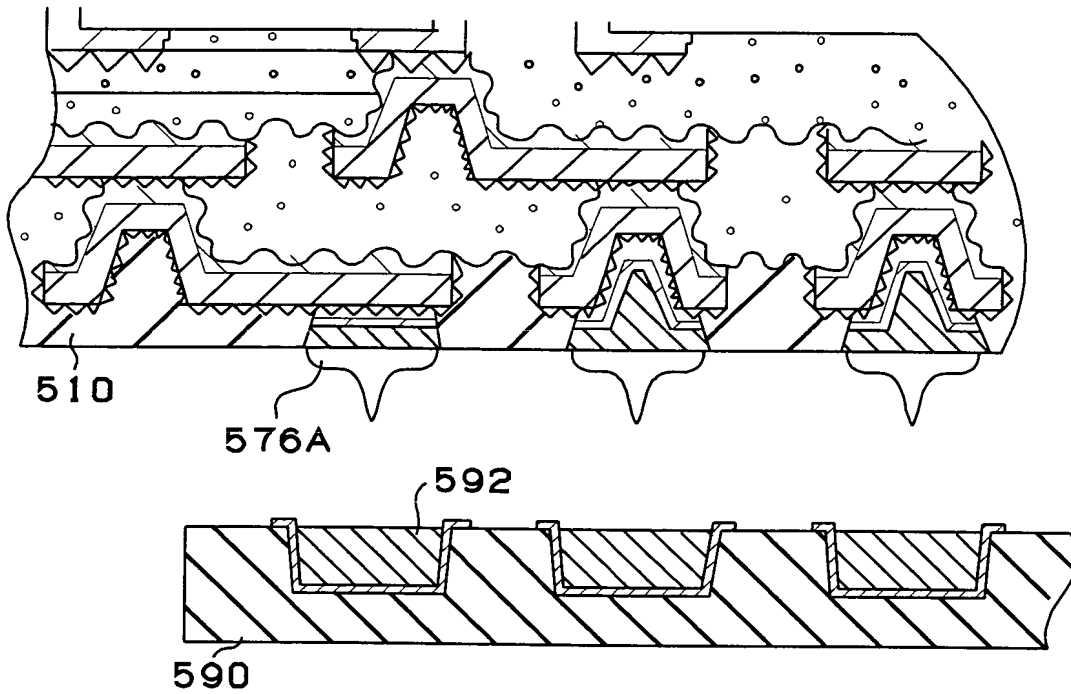
59/76
Fig. 59



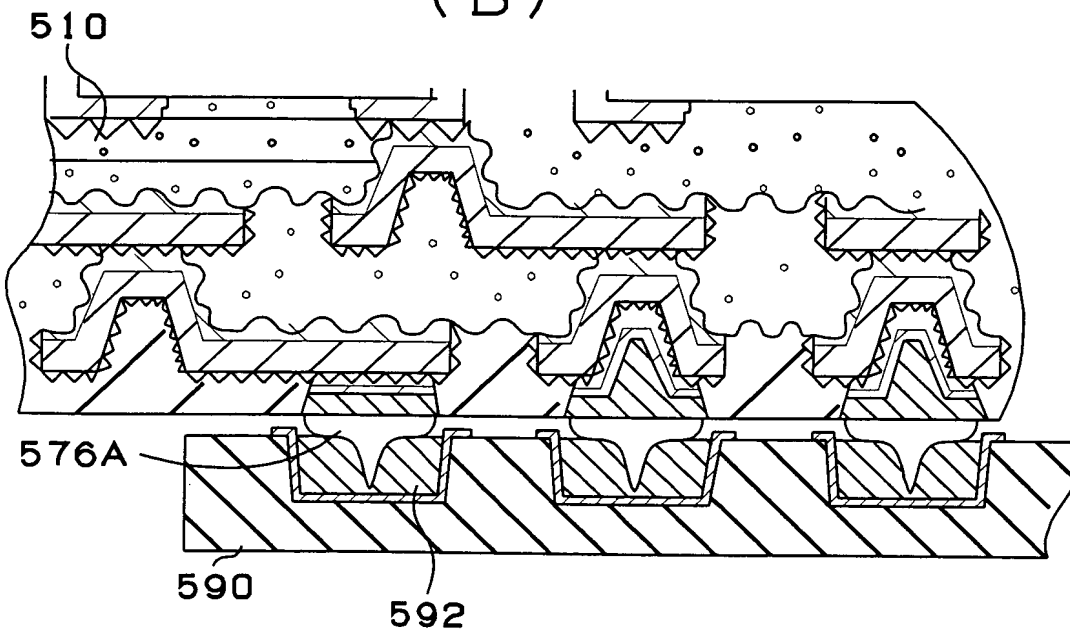
60/76
Fig.60



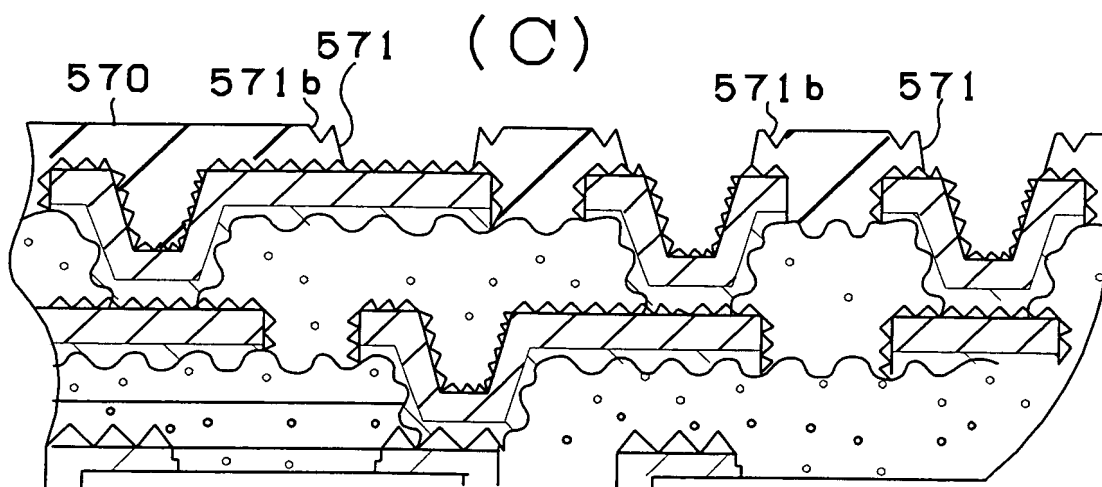
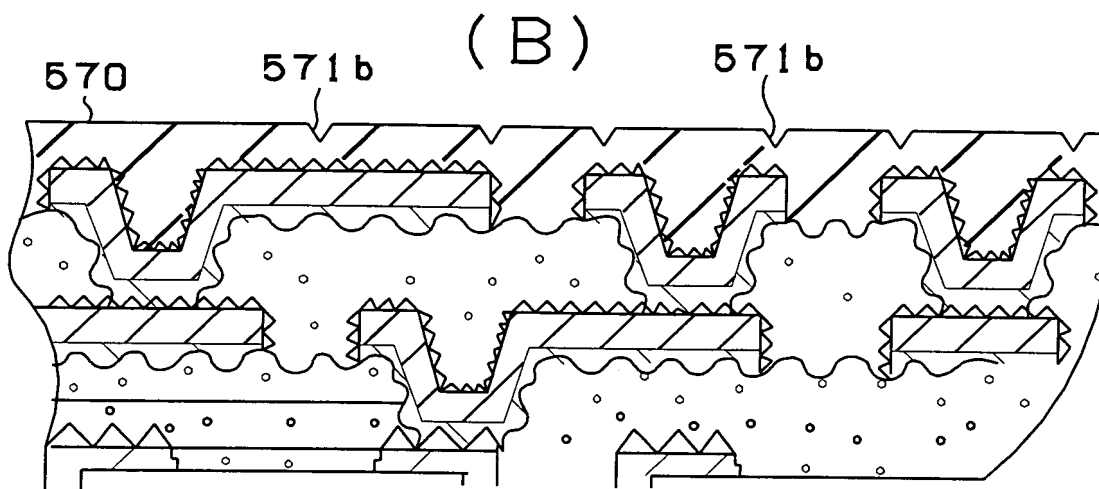
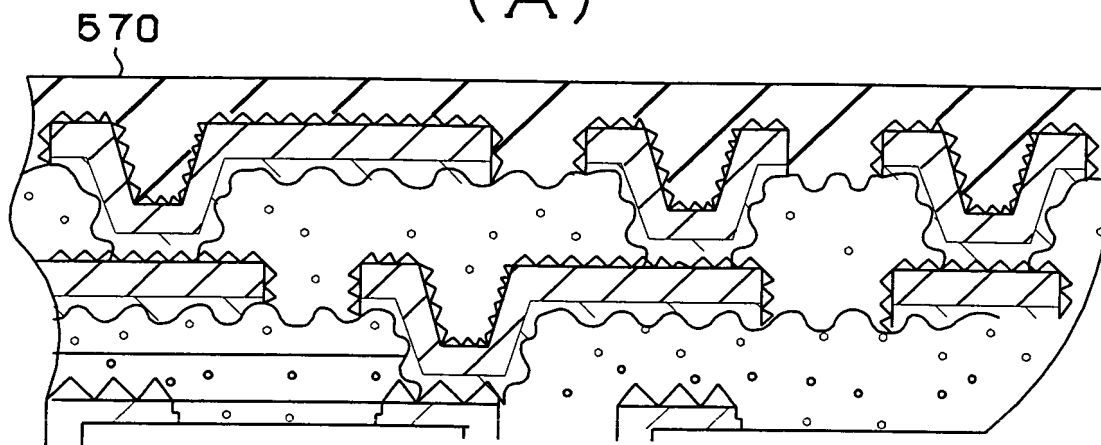
61/76
Fig. 61
(A)

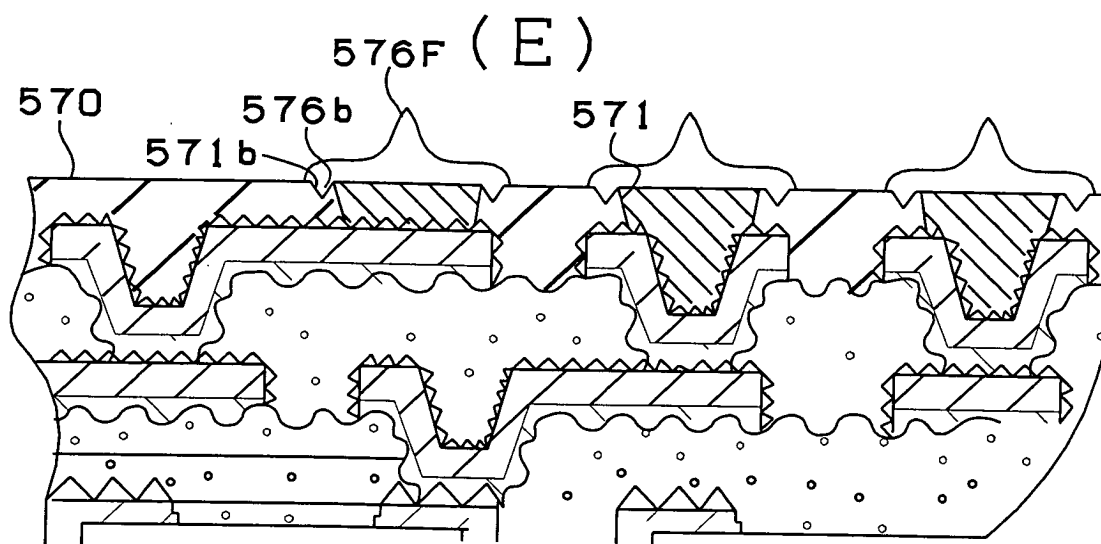
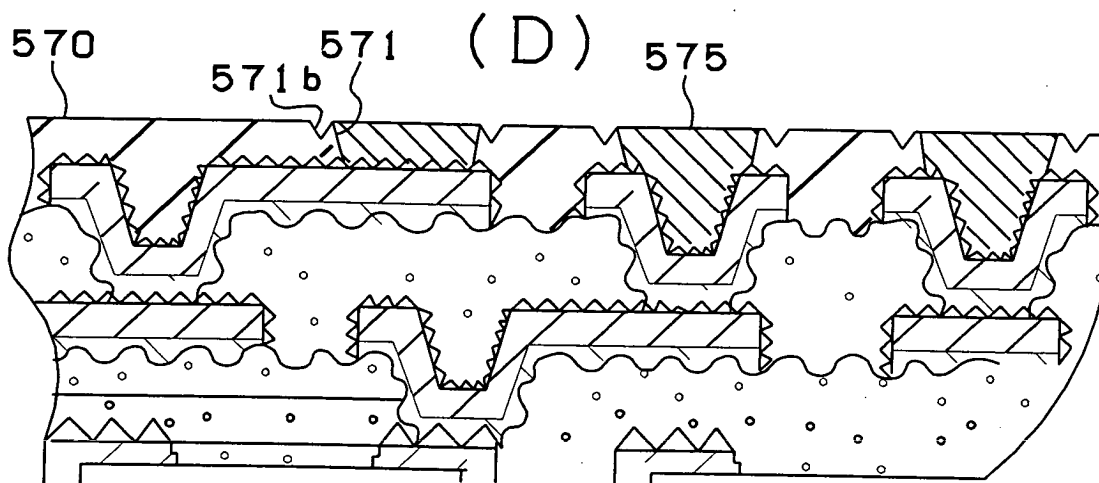


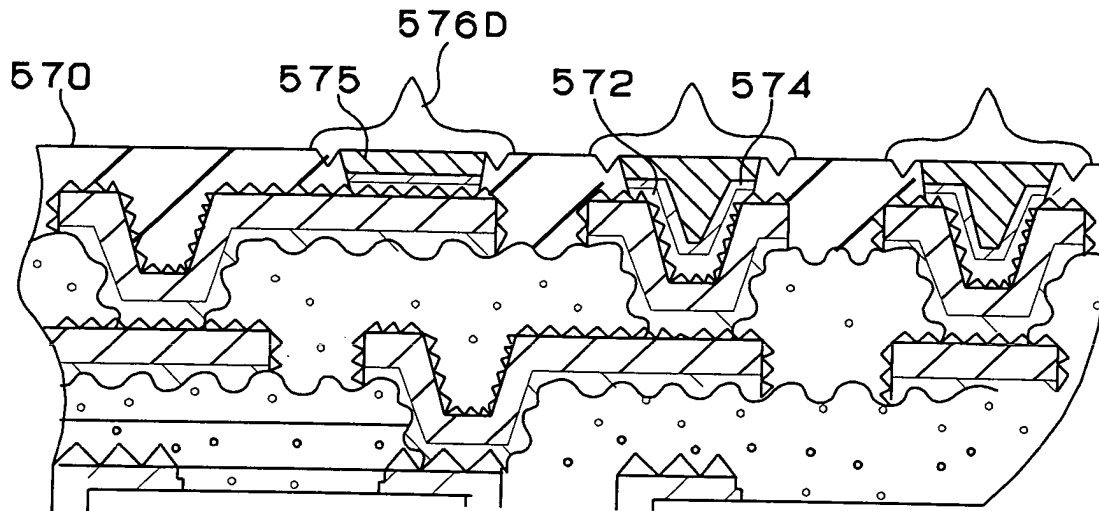
(B)



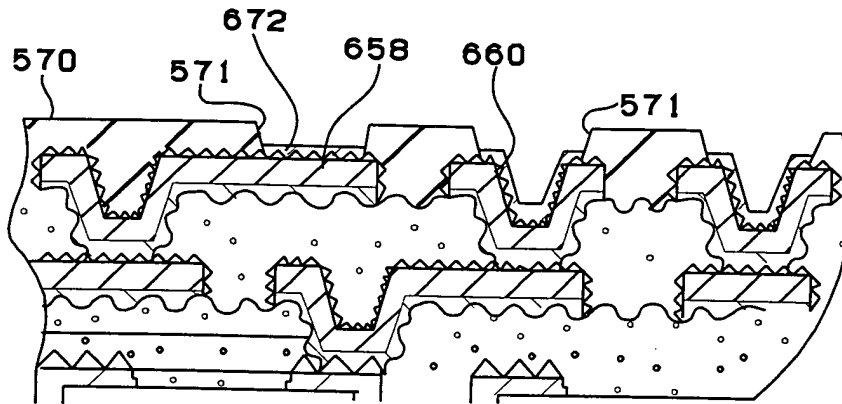
62/76
Fig.62
(A)



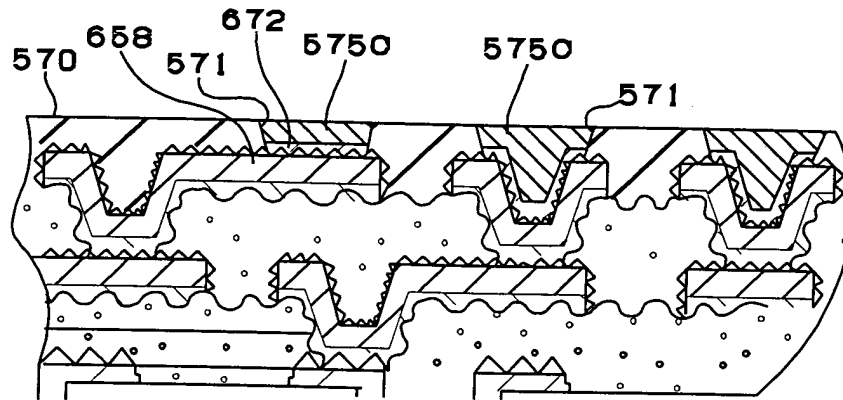
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Fig. 64

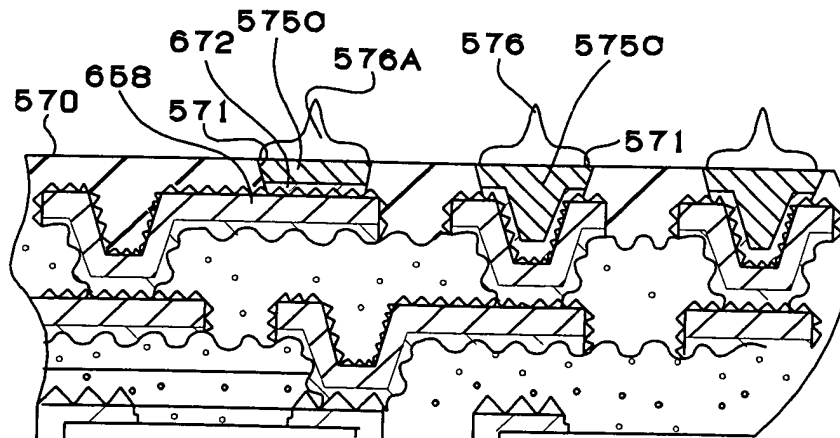
65/76
Fig.65
(A)



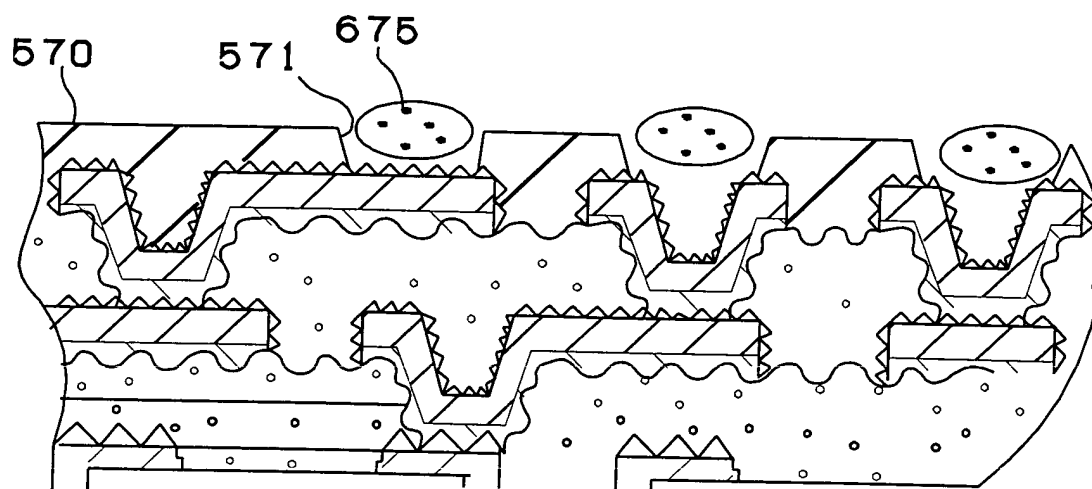
(B)



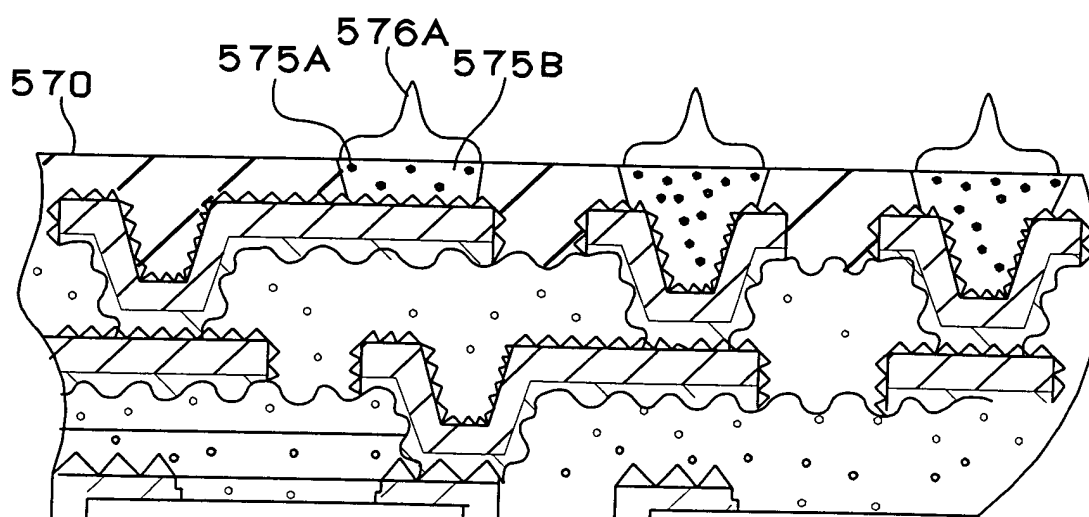
(C)



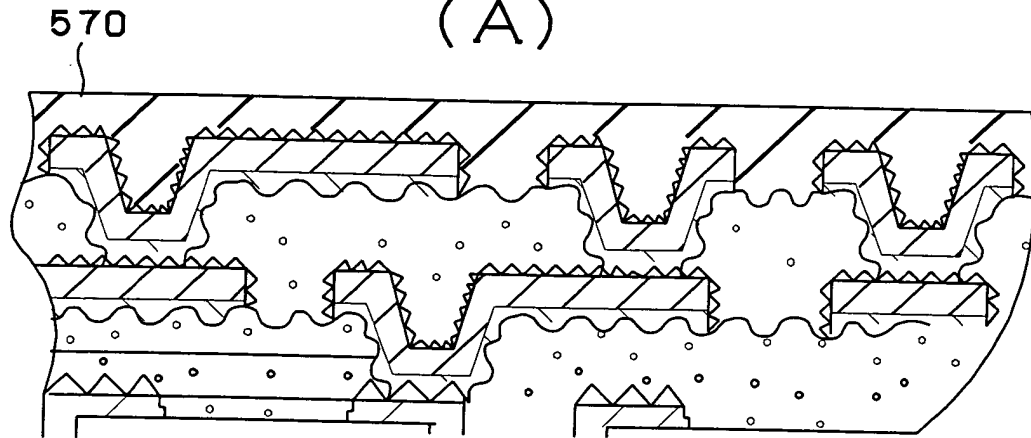
66/76
Fig. 66
(A)



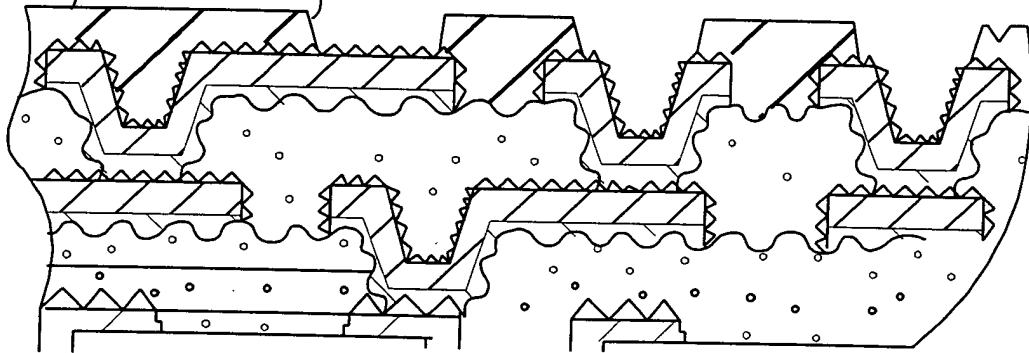
(B)



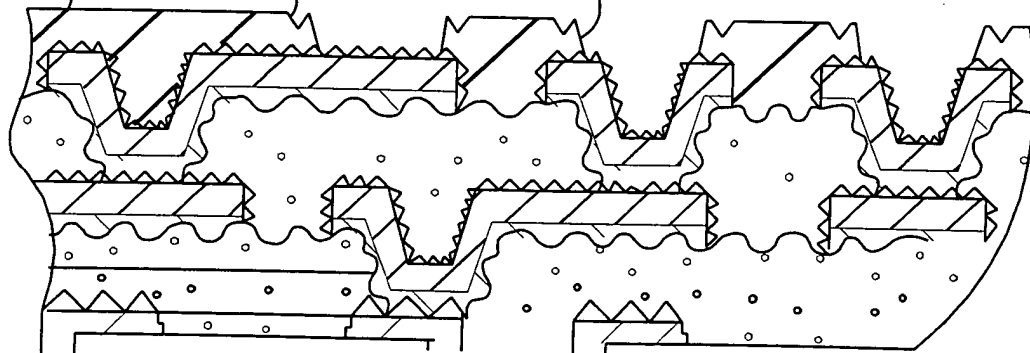
67/76
Fig. 67
(A)



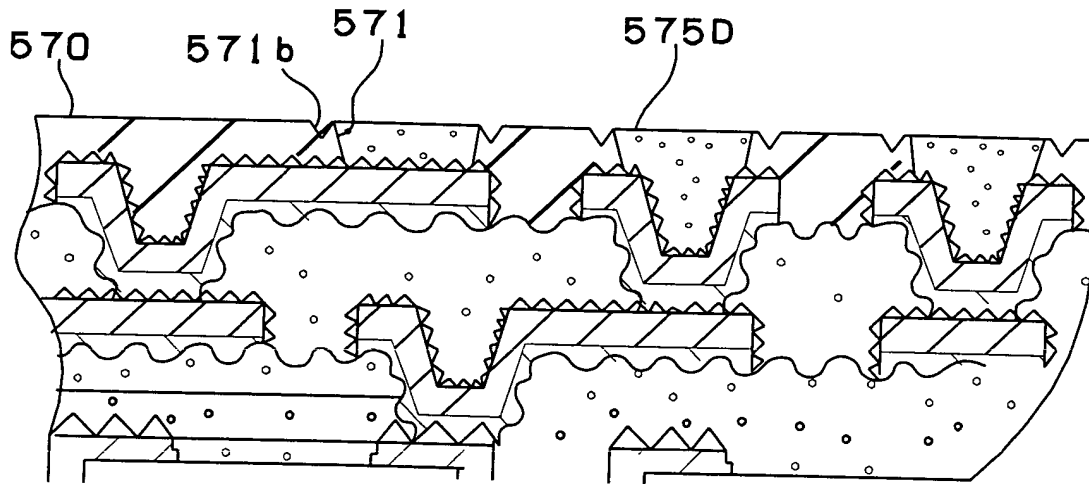
570 571 (B)



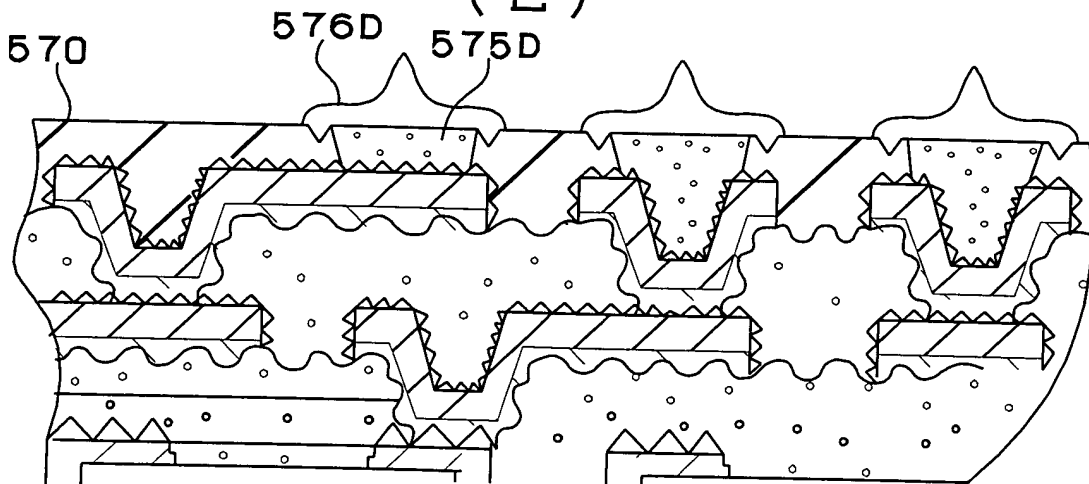
570 630 571b (C) 570



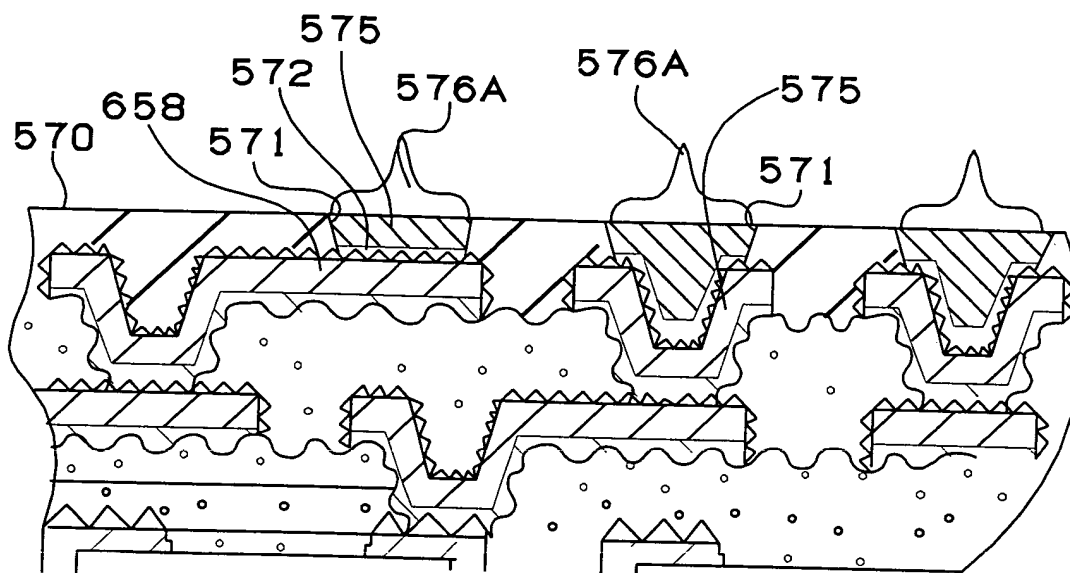
68/76
Fig.68
(D)



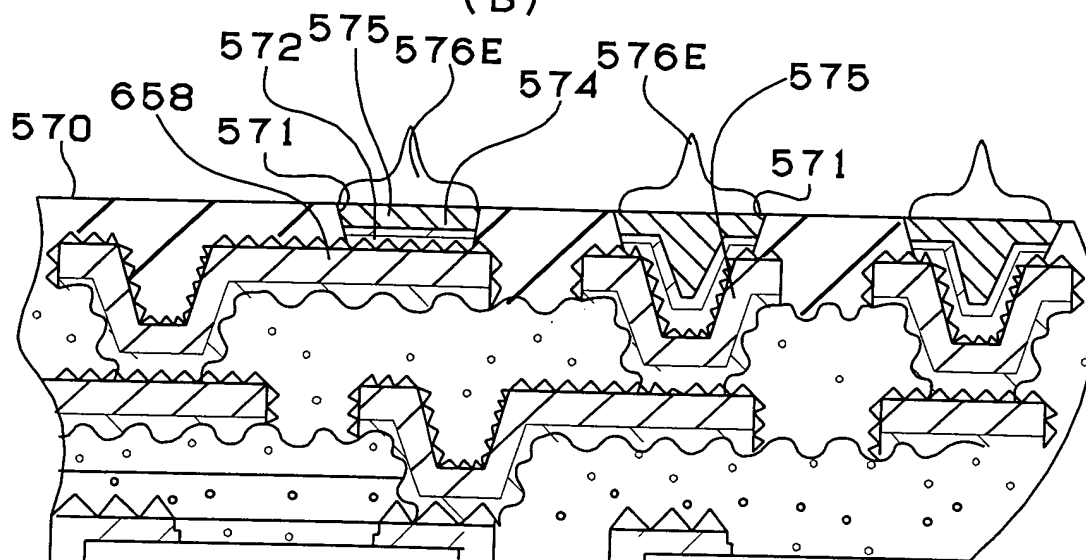
(E)



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Fig. 69
(A)



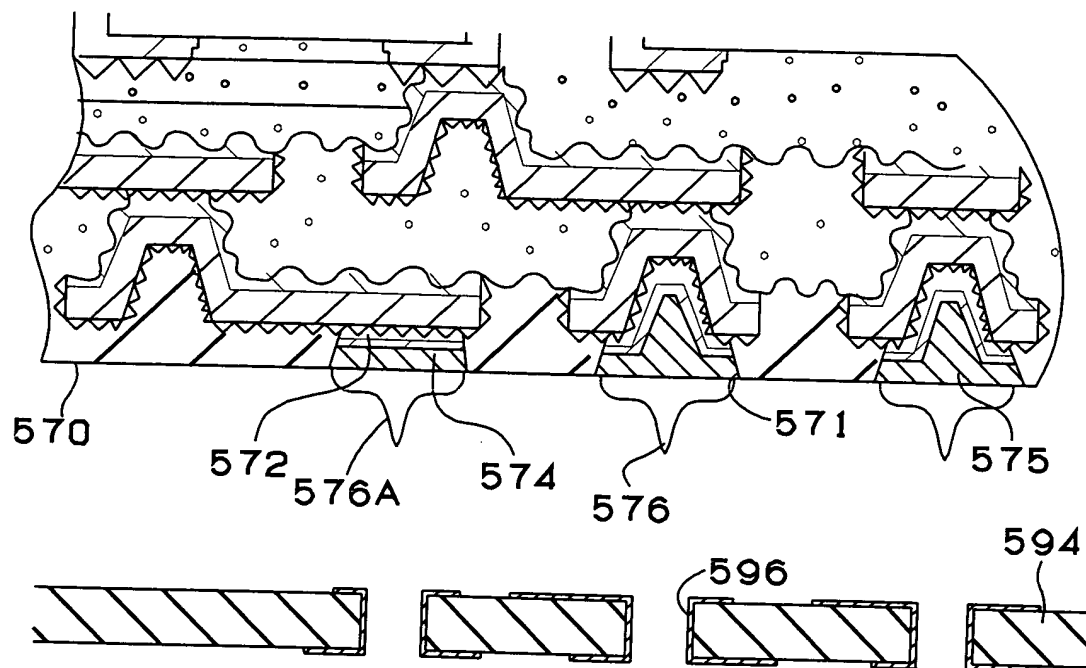
(B)



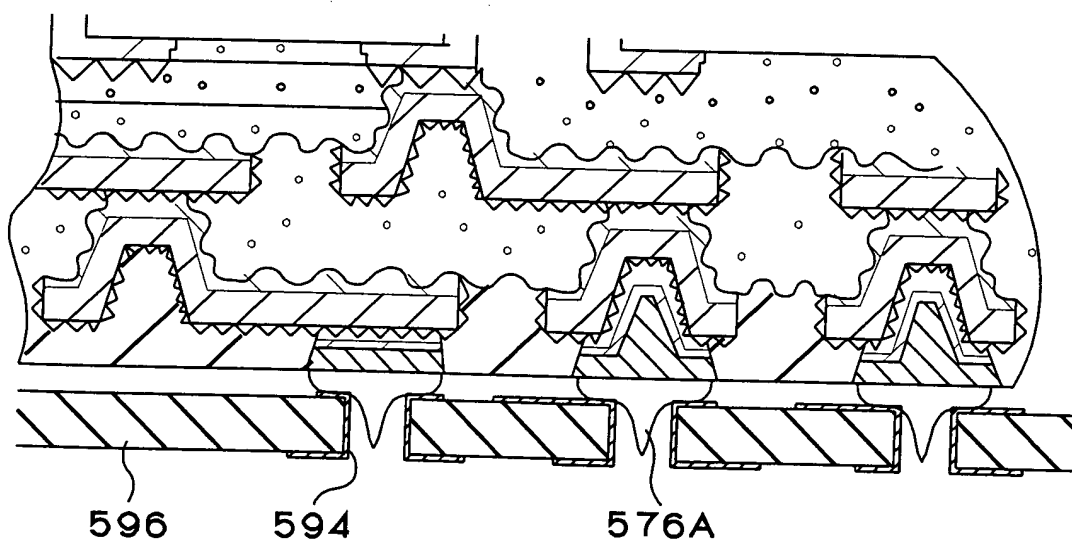
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(A)

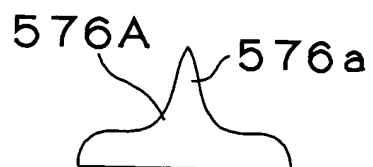


(B)

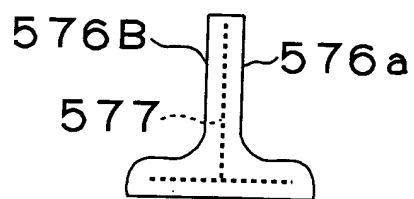


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Fig.71

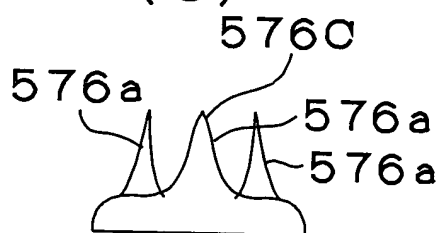
(A)



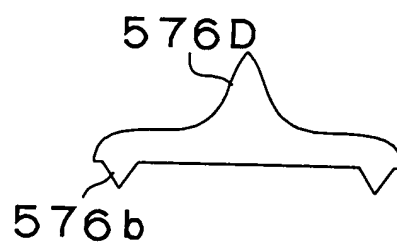
(B)



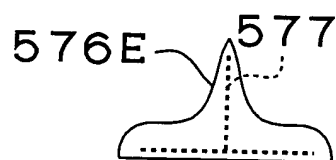
(C)



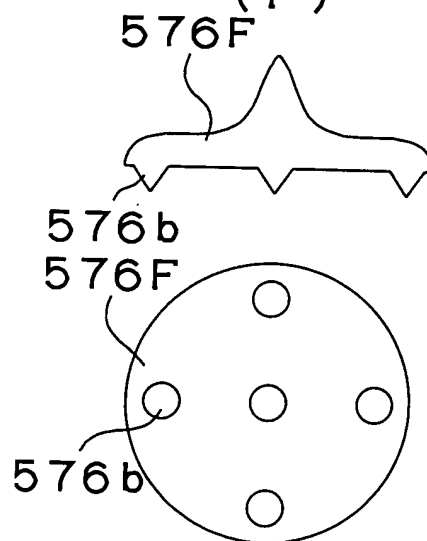
(D)



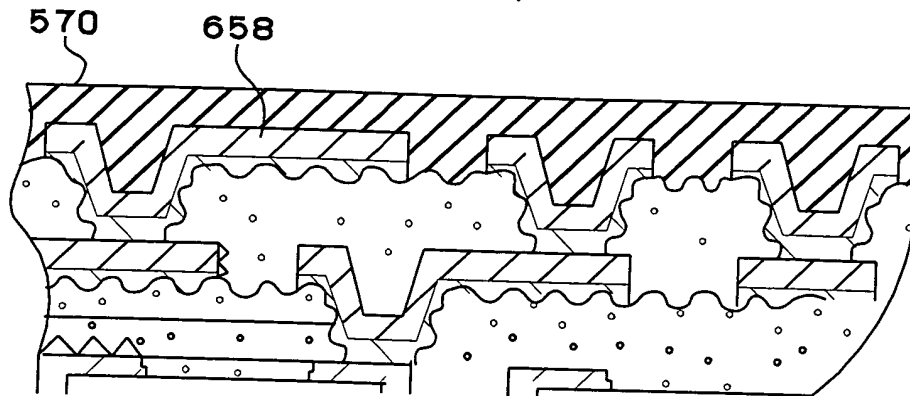
(E)



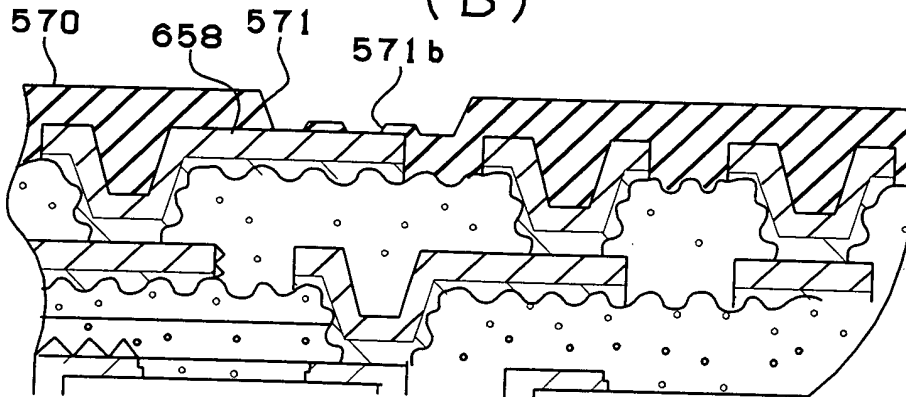
(F)



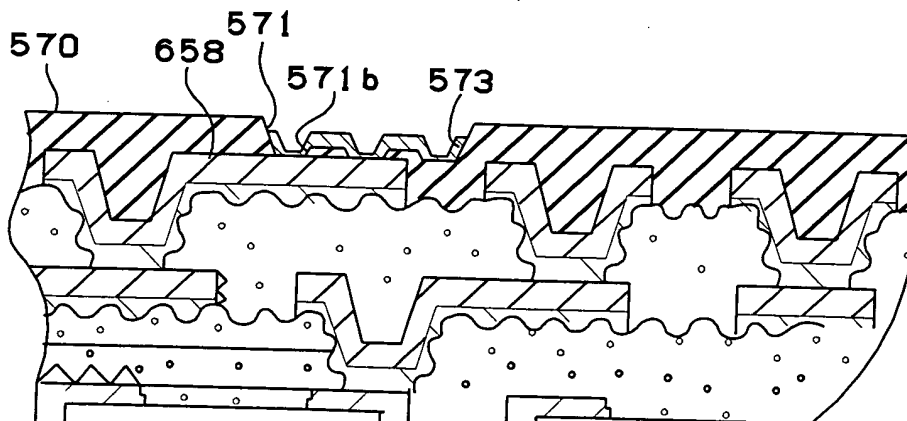
72/76
Fig.72
(A)



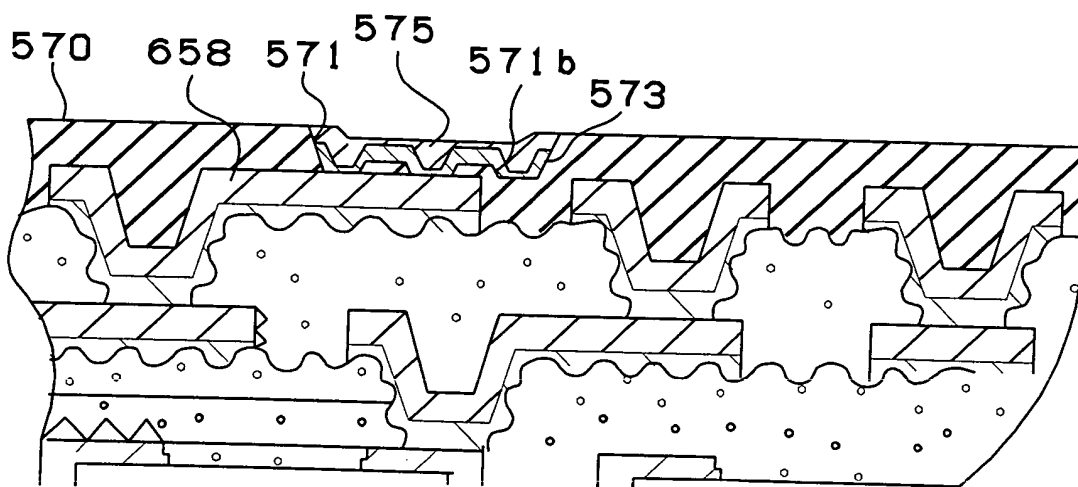
(B)



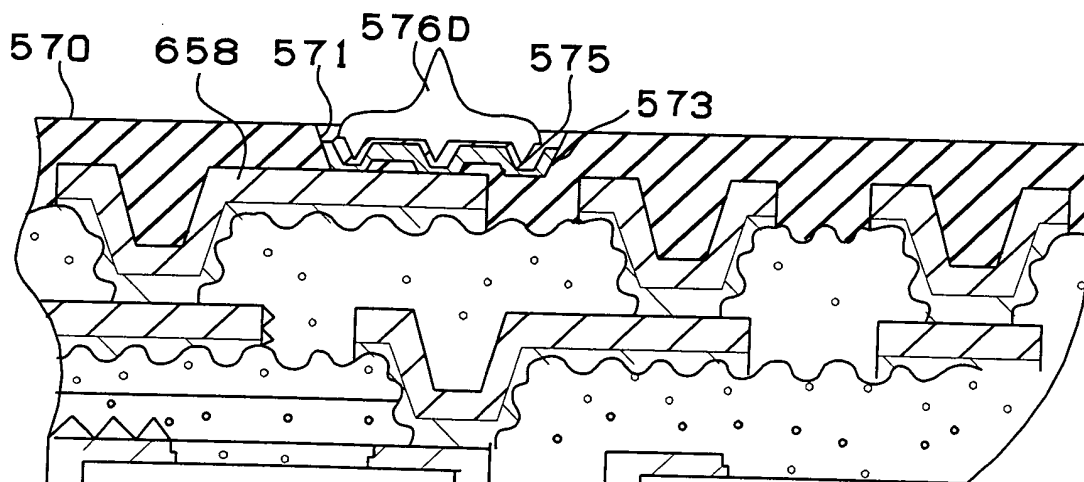
(C)



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Fig.73
(D)



(E)

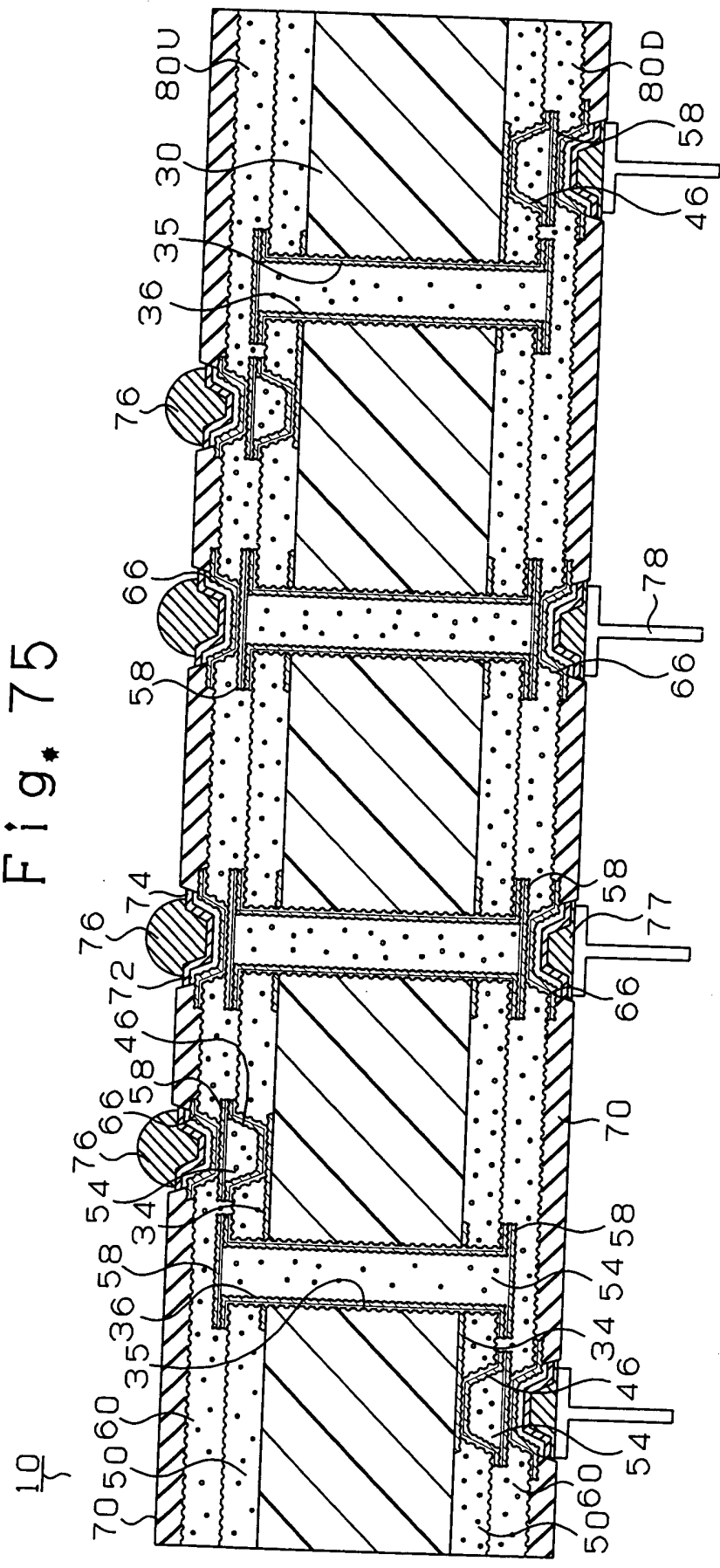


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Fig. 74

	joining strength (kg/cm ²)	problem of pin		after tensile test
		after mounting on substrate	after reliability test	conduction test
fifth embodiment	20	no problem	no problem	no problem
first modification	20	no problem	no problem	no problem
second modification	21	no problem	no problem	no problem
third modification	21	no problem	no problem	no problem
fourth modification	20	no problem	no problem	no problem
fifth modification	20	no problem	no problem	no problem
sixth modification	20	no problem	no problem	no problem
seventh modification	20	no problem	no problem	no problem
eighth modification	21	no problem	no problem	no problem
tenth modification	22	no problem	no problem	no problem
comparative example	18	problem arisen	problem arisen	problem arisen

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Fig. 75



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Fig. 76

